Avocent®

AMX® Switch Series

Installer/User Guide

USA Notification

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Japanese Approvals

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Safety and EMC Approvals and Markings

EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

AMX® Switch Series

Installer/User Guide

Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Dangerous Voltage

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Power On

This symbol indicates the principal on/off switch is in the on position.

Power Off

This symbol indicates the principal on/off switch is in the off position.

Protective Grounding Terminal

This symbol indicates a terminal which must be connected to earth ground prior to making any other connections to the equipment.

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CHAPTER 1

Product Overview

The Avocent AMX® switch is a KVM (keyboard, video and mouse) switch that allows users to access multiple system servers or serial devices from a single keyboard, monitor and mouse. Multiple users in different locations can share access to PC, USB or Sun servers and serial devices.

A typical AMX switching system consists of one or more AMX switches, user stations and Avocent matrix intelligent (IQ) modules. Up to three tiers of AMX switches can be cascaded to provide seamless access to a large number of target devices. Other KVM switches, including Avocent and non-Avocent branded, may also be attached in a cascaded system but do not provide seamless cascading.

All AMX switches are rack mountable and are equipped with the Avocent patented OSCAR® graphical user interface and the AMWorks® Java™-based system administration tool.

Features and Benefits

Multiplatform

With the AMX switching system, you can access any combination of PC, USB or Sun servers and serial devices using a single keyboard and mouse.

Connection sharing

Two or more users can share access to the same target device simultaneously through the AMX switch. When sharing a connection to a target device, all users see the video but only one user at a time controls the keyboard and mouse.

Security

The AMX KVM switching system allows you to house valuable equipment in controlled areas. IQ modules, compact devices that eliminate cable bulk, prevent unauthorized access to a target device through cable manipulation. You can control user access by assigning rights to each username for specific target devices. Administrative privileges, usernames and the serial port are also password-protected.

LDAP user authentication

The AMX switch supports the LDAP (Lightweight Directory Access Protocol) user authentication mode. LDAP provides the Active Directory for username and password authentication.

Advanced video compensation

The AMX user stations and IQ modules provide advanced video compensation that automatically maximizes video quality for long distance communications. You can also manually adjust video quality for specific servers or user stations.

Scalable architecture

The AMX switching system scalable architecture can easily accommodate additional servers and users. IQ modules, user stations and switches are pre-assigned unique identification numbers (UIDs), allowing you to easily reconfigure the switching system. Name changes to IQ modules are automatically sent to all attached user stations, even if the units are on different networks.

Audio and serial support

You can use the AMX switching system to access audio and serial data from connected target devices. To access this feature, the AMX switching system must include multimedia-capable devices and a user station and IQ module that support audio and serial emulation.

Extended keyboard and mouse support

You can use a variety of keyboards and mouse devices to access any target device in the AMX switching system. Most user stations support PS/2, USB and Sun keyboard and mouse types. Some user stations also support the Pinnacle FAK (Fast Action Keyboard) and Chyron Duet keyboard.

Broadcast configurations with nVision router control

In AMX switching system broadcast configurations, studio operators can use Pinnacle FAK or Chryon keyboards and have access to Deko, Chyron CG and other machines used for delivery of live content. Editing suites have access to Avid, SGI and storage machines with full media provided from these machines through an AMX switch and nVision router combination. Broadcast engineers have full access to all servers and equipment to provide maintenance and support. In addition, all valuable equipment is secure and housed in a safe environment.

Connecting an nVision router to the AMX switching system provides video and audio routing functionality to users. When a user in the AMX switching system connects to a target device, the nVision router will automatically connect the audio and video signals from the target device to the user’s workstation.

Seamless cascading

You can increase the number of target devices that users can access by creating a cascaded switching system. You can connect target devices to up to three levels of AMX or non-Avocent KVM switches. When cascading AMX switches, you can seamlessly connect to any target device from a single list in the OSCAR interface, as if all the target devices were connected to one switch. You can also cascade non-Avocent KVM switches, but to access the attached target devices you must first select the non-Avocent switch from the OSCAR interface target list, and then connect to the target device using the methods provided by the non-Avocent KVM switch.

OSCAR graphical user interface

With the OSCAR graphical user interface, you can use your keyboard or mouse to select any attached target device. This easy-to-use, menu-driven interface also enables you to administer security settings, language and keyboard selection, hotkey sequences and other features.

Administration using the AMWorks software

The AMWorks Java-based system administration software tool is supplied with each AMX switch. Use it to assign names to attached target devices and users, designate user access rights, monitor switching system events, and upgrade firmware. You can also use AMWorks software to configure AMX switching system installations remotely, eliminating the need to configure each unit separately.

System monitoring using the SNMP interface

The AMX switch supports the Simple Network Management Protocol (SNMP) to remotely monitor the switch via the ethernet port. Once SNMP is configured, you can use the SNMP protocol to manage and control user stations and their connections in the switching system.

Glossary

The following terms are used throughout this documentation:

- Cascading – Connecting multiple KVM switches to an AMX switch, providing additional connections for target devices. Cascading expands the number of target devices that can be connected to the AMX switching system.
- Console – The user station and peripheral devices used by each local user.
- IQ module – The primary interface between an attached device (KVM switch, serial device or PS/2, Sun or USB server) and the AMX switching system. IQ modules are server-powered and provide keyboard emulation, DDC (Digital Data Channel) and AMX switching system support.
- Peripheral devices – The set of communication devices connected to each user station. May include keyboard, monitor, mouse, speakers and headphones.
- Switch – Equipment that provides KVM connectivity to attached target devices.
- Switching system – A set of switches and attached target devices, user stations, IQ modules and peripheral devices.
- Target device – Equipment such as a server or serial device that is attached through an IQ module to a switch or user station and can be accessed through the switching system.
- Unit – Includes switches, user stations and target devices; this term is used when the procedure is referring to any or all.
- User station – The interface between the AMX switch and system users, storing local (console) settings and providing connections for peripheral devices. The user station also provides the OSCAR interface for target device selection and administration.

Component Overview

An AMX switching system typically consists of four main components:

- One or more AMX switches.
- One or more Avocent AMX matrix user stations.
- One or more Avocent IQ modules, available in several different types including the AMIQ, AMIQDM and AMIQ-SRL modules.
- Unshielded Twisted Pair (UTP) cables.

A typical AMX switching system configuration is illustrated in Figure 1.1.

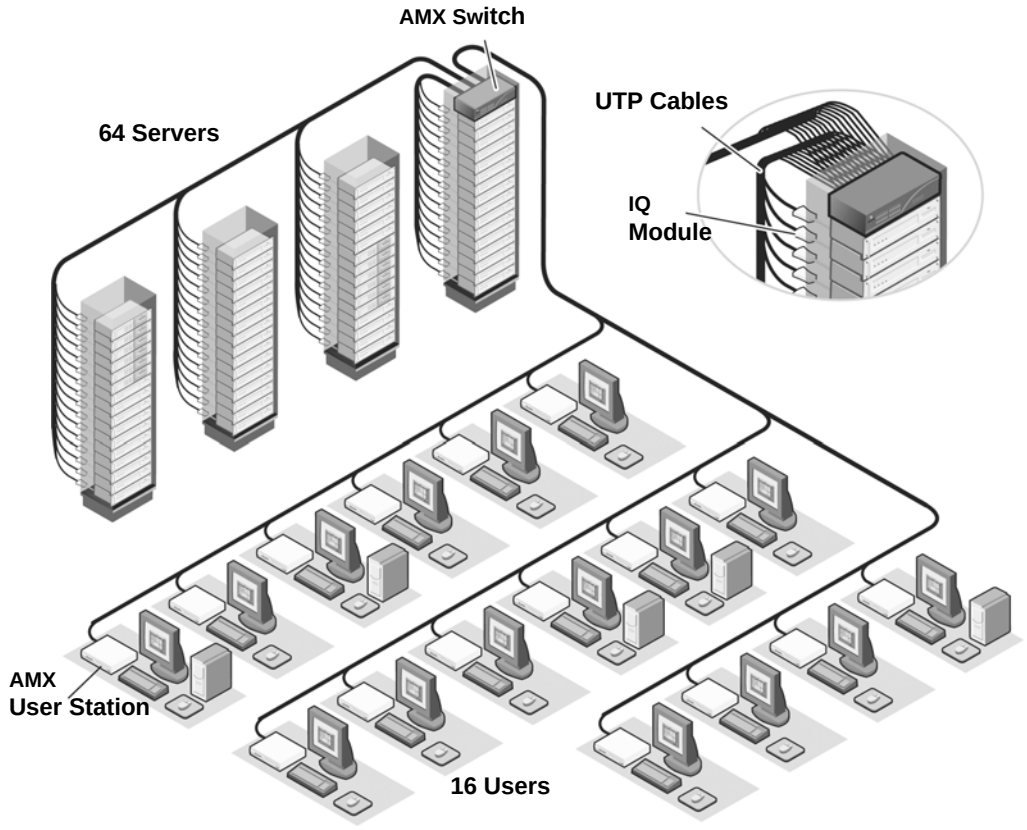

Figure 1.1: Typical AMX Switching System Configuration

The AMX switch

The AMX switch provides the framework for the AMX switching system and is available in a variety of matrix sizes. Each AMX switch can be cascaded to create larger system configurations. The AMX switch stores a full database of user rights and server names and communicates with the AMWorks software through an IP (Internet Protocol) port.

The AMX user station

The AMX user station, the interface between the AMX switch and system users, stores local (console) settings and provides connections for peripheral devices. The user station also provides the OSCAR interface for target device selection and administration.

The AMX switch IQ modules

The IQ module is the primary interface between an attached device (KVM switch, serial device or PS/2, Sun or USB server) and the AMX switching system. If the switch loses power, the target devices will continue to power the IQ modules. This Keep Alive functionality ensures continued keyboard and mouse operability and prevents data loss. Available in three types, IQ modules also provide keyboard emulation, DDC (Digital Data Channel), and AMX switching system support.

- AMIQ module – a standard IQ module that connects a target device to the switching system. AMIQ modules are available for PS/2, USB and Sun VGA or 13W3 interfaces.
- AMIQDM module –a two-port IQ module that enables one server to be shared between two AMX switches, increasing the number of users that can be added to the switching system. The AMIQDM module also enables the multimedia feature (audio and serial data communication) when it is connected to a user station that supports this feature. AMIQDM modules are available as PS/2, USB and Sun VGA interface modules.
- AMIQ-SRL (serial) module – a DCE (Data Communication Equipment) device that is the primary interface between a serial device and the AMX switching system. It supports VT100 terminal emulation, break suppression and port history. See *Appendix B: Using AMIQ-SRL Modules* on page 77 for more information.

IQ modules are connected to the switching system with UTP cabling and eliminate the need for additional cables or extra rack spaces. Each IQ module has a factory-assigned unique number that identifies the attached target device within the system.

UTP cables

You may use any combination of CAT 5, CAT 5e and CAT 6 cables in the AMX switching system.

NOTE: Throughout this manual, UTP refers to any CAT cable used by the AMX switching system.

Safety Precautions

To avoid potential video and/or keyboard problems when using Avocent products:

- If the building has 3-phase AC power, ensure that the server and monitor are on the same phase. For best results, they should be on the same circuit.

To avoid potentially fatal shock hazard and possible damage to equipment, please observe the following precautions:

- Do not use a 2-wire extension cord in any Avocent product configuration.
- Test AC outlets at the server and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the server and monitor. When using a backup Uninterruptible Power Supply (UPS), power the server, the monitor and the AMX switch off the supply.

NOTE: The AC inlet is the main disconnect.

DC installation safety considerations

As a safety precaution, install this product in an area with limited or controlled access. A readily accessible disconnect device that is suitably approved and rated shall be incorporated in the field wiring. Connect field wiring from earth ground to the screw terminal marked with the ground symbol. Terminals will accommodate wiring from 26 to 12 AWG (up to 2.5 mm2 maximum cross section). Strip each wire, insert it in the square opening in the terminal block and tighten the screw above it to a maximum of 70 ounce-inches (0.5 Nm) using either a flat or Phillips-head screwdriver.

Rack mount safety considerations

- Elevated Ambient Temperature: If installed in a closed rack assembly, the operation temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the unit.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings for maximum current.
- Reliable Earthing: Reliable earthing of rack mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

CHAPTER 2

Installation

AMX Switching Systems

AMX switching systems consist of an AMX switch or switches, user stations, target devices, IQ modules and peripheral devices. See Figure 2.1 on page 8 and Figure 2.2 on page 9 for examples of switching system configurations.

Getting Started

Before installing your AMX switching system, make sure you have access to the following items:

- The AMX switch and all of the items supplied with it. These items may include a power cord, rack mounting brackets, a null modem cable, installation CDs and help materials.
- UTP cables for each target device and user station you plan to attach to the switching system.
- One AMIQ or AMIQDM module for each server and one AMIQ-SRL module for each serial device.
- AMWorks software, available by free download at www.avocent.com/support or on the installation CD included with the AMX switch.

Figure 2.1 illustrates one possible switching system configuration using AMIQ and AMIQ-SRL modules.

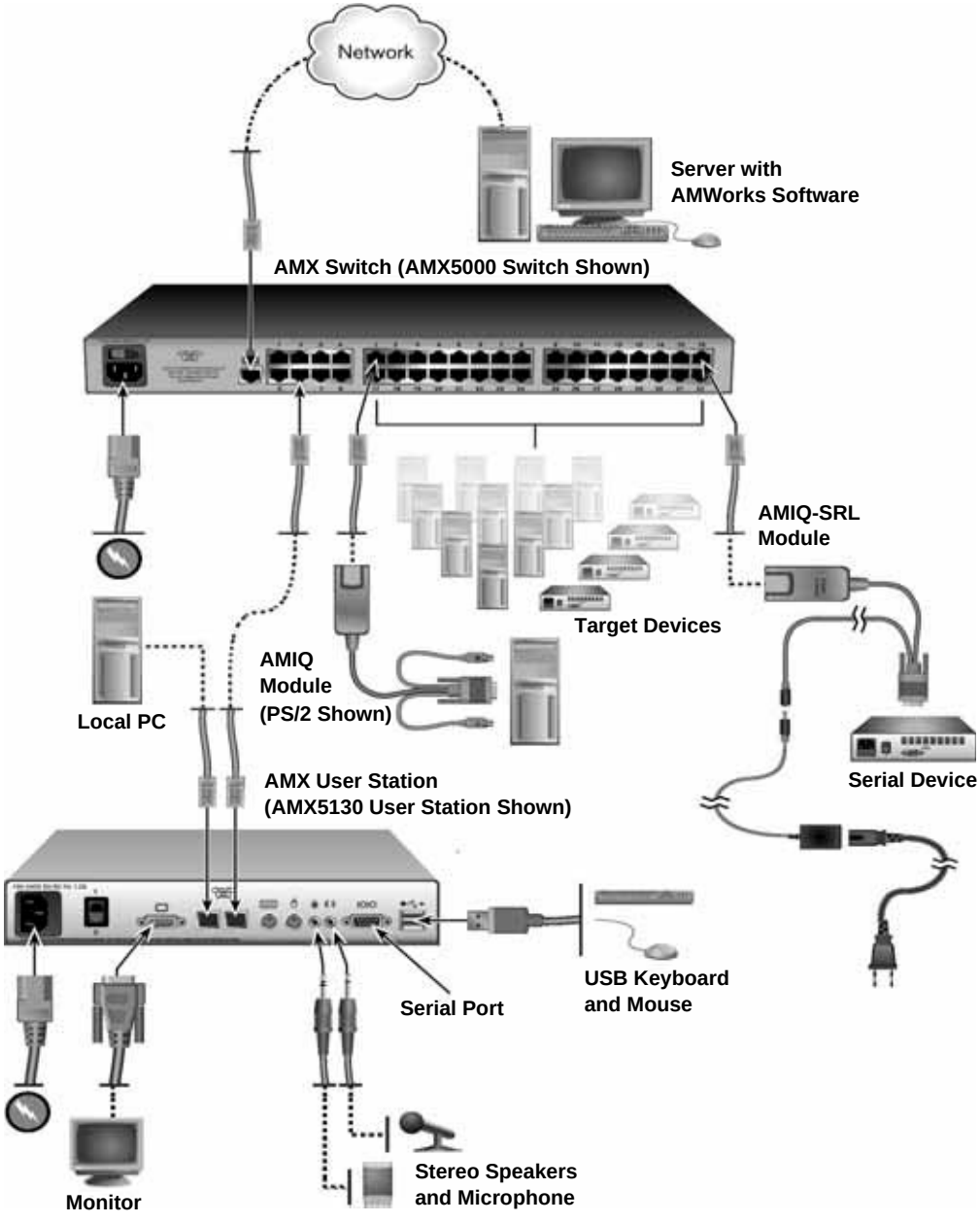

Figure 2.1: AMX Switching System Configuration with AMIQ and AMIQ-SRL Modules

Figure 2.2 illustrates another possible switching system configuration using AMIQDM modules, specialized IQ modules with dual port connectivity and audio and serial connections.

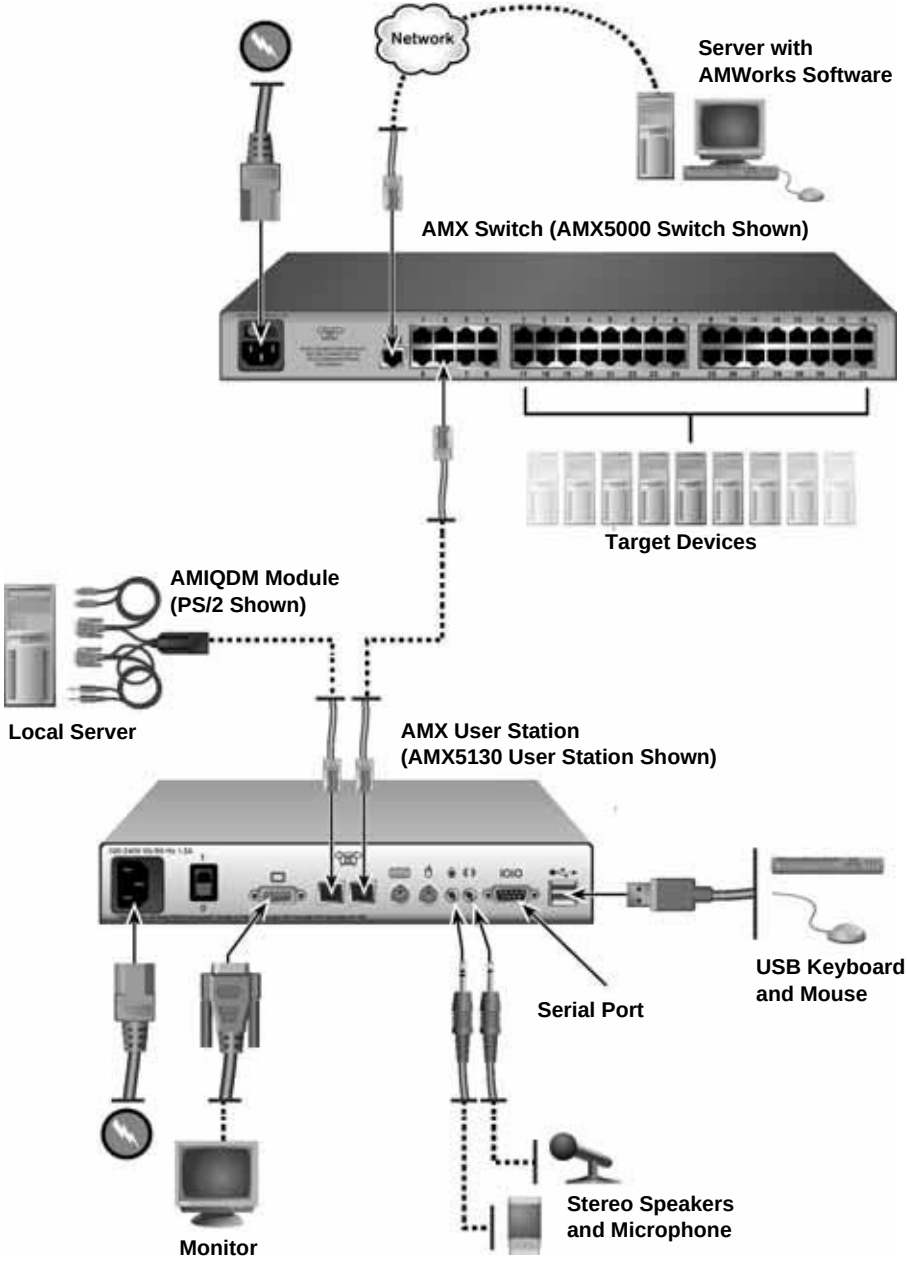

Figure 2.2: AMX Switching System Configuration with AMIQDM Modules

Rack Mounting an AMX Switch

A rack mounting kit is supplied with each AMX switch. You may either place the AMX switch on the rack shelf or mount the switch directly into an Electronic Industries Alliance (EIA) standard rack.

CAUTION: Rack Loading - Overloading or uneven loading of racks may result in shelf or rack failure, causing damage to equipment and possible personal injury. Stabilize racks in a permanent location before loading begins. Mount components beginning at the bottom of the rack, then work to the top. Do not exceed your rack load rating.

CAUTION: Power Considerations - Connect only to the power source specified on the unit. When multiple electrical components are installed in a rack, ensure that the total component power ratings do not exceed circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.

To install the rack mounting bracket:

1. Remove the two rack mounting screws from each side of the AMX switch.
2. Place the rack mounting brackets next to the switch as illustrated in Figure 2.3.
3. Insert the screws supplied with the rack mounting kit through the holes of the brackets and into the AMX switch. Tighten the screws securely.

Install the AMX switch into the rack using the approved method of the rack manufacturer.

Figure 2.3: AMX Switch Rack Mounting Diagram

Installing an AMX Switch

To install a new AMX switch, you will connect power sources, configure network settings and connect the switch to the local area network (LAN).

NOTE: Turn off the AMX switch and disconnect the power cord from the AC outlet before servicing.

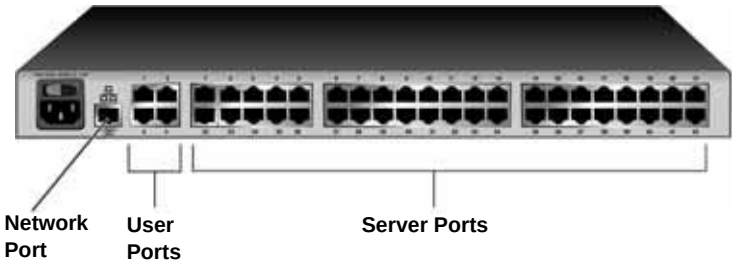

Figure 2.4: Example of an AMX Switch Back Panel (AMX5020 Switch Shown)

CAUTION: To reduce the risk of electric shock or damage to your equipment -
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect the power from the unit by unplugging the power cord from either the electrical outlet or the unit.

To connect power sources:

Attach one end of the supplied power cord into the back panel of the AMX switch and attach the other end to an AC power source.

To configure network settings for the switch:

1. Use the supplied modem cable to connect a terminal or PC running terminal emulation software (such as HyperTerminal®) to the labeled terminal port of the AMX switch. The terminal should be set to 9600 baud, 8 bits, 1 stop bit, no parity and no flow control.
2. Power up the AMX switch.

   The Power indicator on the front of the switch will remain orange for approximately 30 seconds while performing a self-test and then change to green. This indicates a healthy condition.
3. When you first access the switch, you will be prompted through the Terminal window to enter a username.
   a. Enter the username **admin**. By default, a password is not required. Once you have access to the AMX switch terminal applications menu, you can change the default username and password for the serial port. For more information see *Set/Change Password* on page 64.
   b. Press **Enter**.
4. The AMX switch Console menu will open automatically. Select option 1, *Network Configuration*.
   a. Select option 1 to set the IP address.
   b. Select option 2 to set your netmask.
   c. Select option 3 to set your default gateway.
5. Type **0** to return to the AMX switch Console menu.
6. Complete one of the following steps to set the configuration ID for the AMX switch.

- If all AMX switches in your installation are part of the same AMX switching system configuration, leave the configuration ID set to **00000**.
- If you are running more than one AMX switching system configuration within your subnet, designate the group to which this AMX switch belongs. Select option 2 and enter the configuration ID for your AMX switch. A configuration ID will designate an AMX switch as part of a unique installation. When change commands are issued through the AMWorks software, only units with the same configuration ID as the AMWorks software will be affected. Refer to *System Management on page 64* for more information on setting configuration IDs.

7. Type **0** to return to the AMX switch Console menu.
8. Select option 3 and follow the prompts to password protect your AMX switching system terminal settings.

CAUTION: This password places your AMX switch terminal in a secure mode. This password should be guarded like any network password and care should be taken to avoid forgetting or misplacing it. This password cannot be reset or recovered if lost or forgotten. Should you lose your password, please contact Avocent Technical Support for assistance.

9. Type **0** to exit the AMX switching system Console menu.

You can configure other switch settings using the Terminal Applications menu. Refer to Chapter 4 beginning on page 63 for more details.

To connect the AMX switch to the LAN:

Attach a UTP cable to the Network port on the back panel of the AMX switch and connect the switch to the LAN.

Connecting Target Devices to the AMX Switch

Once the AMX switch is installed, attach servers or serial devices to the switch using IQ modules. Figure 2.5 on page 13 illustrates how to connect target devices to the switching system.

To connect servers to the AMX switching system:

1. Choose an appropriate IQ module and insert the connectors into the corresponding ports on the back of the server.

   Some IQ modules provide audio and serial connectors, which may be left unattached if this functionality is not required for the switching system.
2. Attach one end of a UTP cable into the RJ-45 port on the IQ module. Attach the other end of the cable to an RJ-45 server port on the AMX switch.

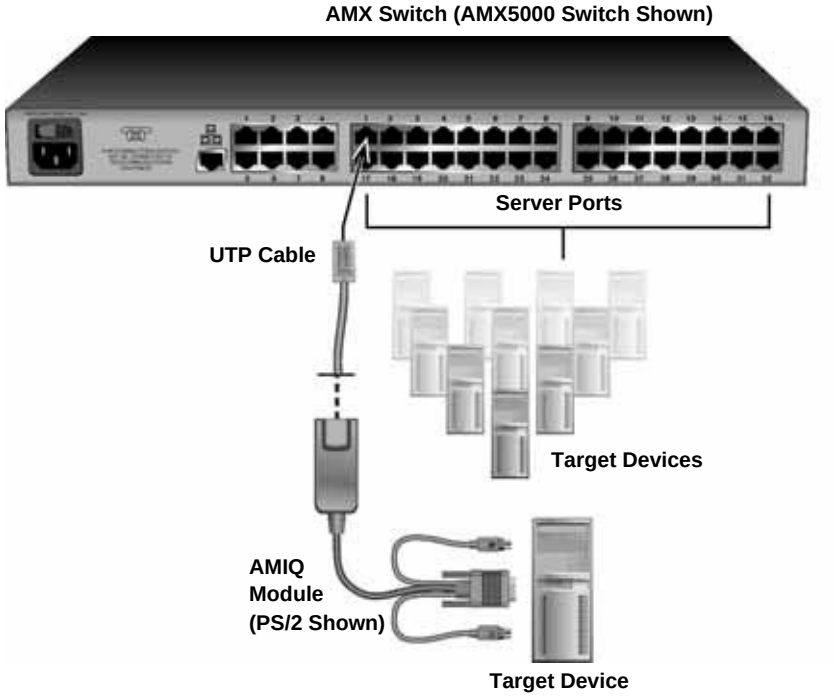

Figure 2.5: Connecting Target Devices to an AMX Switch (AMX5000 Switch Shown)

3. For future reference, note the unique identifier (UID) on the back of the IQ module and the target device to which it is attached.
4. Repeat this procedure for every server that will be attached to the AMX switching system.

To connect serial devices to the AMX switching system:

NOTE: The AMIQ-SRL module is a DCE device and only supports VT100 terminal emulation.

1. Attach the AMIQ-SRL module to the serial port of the device to be attached.
2. Attach one end of a UTP cable to the RJ-45 connector on the AMIQ-SRL module. Attach the other end of the cable to an RJ-45 server port on the back panel of the AMX switch.
3. Attach the power supply to the power connector on the AMIQ-SRL module. Up to four AMIQ-SRL modules can be powered from a single power supply.
4. Attach the AMIQ-SRL module power supply to an AC wall outlet.

Repeat this procedure for every serial device that will be attached to the AMX switching system. See *Using AMIQ-SRL Modules* on page 77 for more information about using AMIQ-SRL modules.

Connecting Users to the AMX Switching System

Once all target devices are attached, add users by attaching user stations and peripheral devices to the AMX switching system. Figure 2.6 illustrates how to connect users to the switching system.

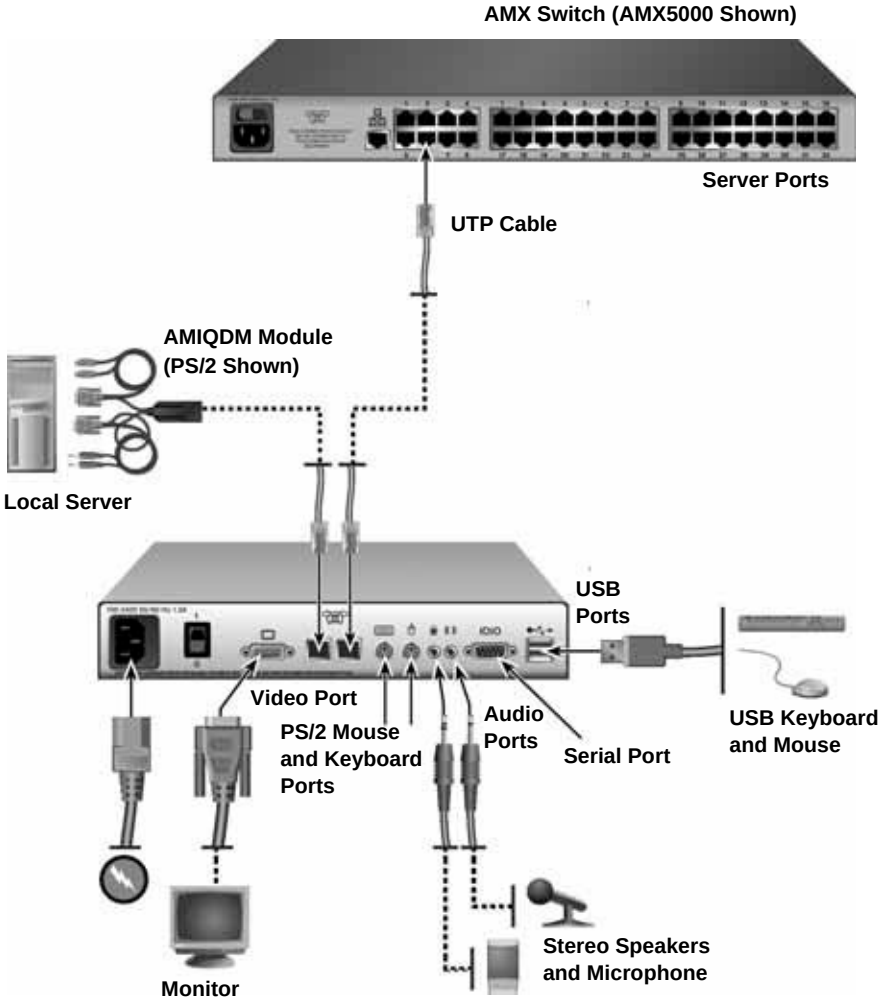

Figure 2.6: Example of an AMX User Station Back Panel (AMX5130 User Station Shown)

Supported keyboard and mouse types

To determine what keyboard and mouse types your user station supports, examine the available ports on the back panel of the user station. USB and PS/2 ports are designated by symbols as shown

in Figure 2.6 and Sun ports (not shown) are labeled. If an appropriate port is available, the keyboard or mouse type is supported by the user station.

Pinnacle FAK and Chyron Duet keyboards are connected through the PS/2 port. If these specialized keyboards are supported on your user station, you will be able to select the corresponding keyboard type using the OSCAR interface.

To connect users to the AMX switching system:

1. Place the AMX user station near the monitor. The user station can be used as a monitor stand.
2. Attach peripheral devices to the corresponding ports on the back panel of the user station.
3. Attach one end of a UTP cable into an RJ-45 port on the user station. Attach the other end of the cable to an RJ-45 user port on the AMX switch.

NOTE: You may only connect each user station to one AMX switch.

4. Attach one end of the supplied power cord to the power socket on the back panel of the user station and attach the other end to an AC wall outlet.

To set the keyboard type:

If you attached a Pinnacle FAK or Chyron Duet keyboard to the user station, complete the following steps to activate the keyboard in the OSCAR interface:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.
3. Select the appropriate keyboard type from the Type drop-down menu. The drop-down menu only allows you to select keyboard types supported by the attached user station.
4. Click *Apply.*
5. If you connected a Pinnacle FAK keyboard, complete the following steps:
   a. Click the *Admin* tab.
   b. Select the target device that will be running software that requires Pinnacle FAK support.
   c. Click *Edit device*.
   d. Select *Pinnacle FAK* from the Emulation drop-down menu. You can only edit the emulation mode if the device type is PS/2. (If you are using a Chyron Duet keyboard, the Emulation mode should be Standard.)
   e. Click *Apply*.
6. Close the OSCAR interface.

Connecting a Local Server to the AMX Switching System

After all users are connected to the AMX switching system, you can attach a local server. The local server can be accessed from the user station to which it is attached, but not by other users in the switching system. For illustrations of switching systems with a local server, see Figure 2.2 on page 9.

To connect a local server to the AMX switch:

1. Choose an appropriate IQ module and insert the connectors into the corresponding ports on the back of the server.

   Some IQ modules also provide audio and serial connectors, which may be left unconnected if this functionality is not required for the switching system.
2. Attach one end of a UTP cable into the RJ-45 port on your IQ module. Attach the other end of the cable to an RJ-45 server port on the AMX user station.
3. Note the unique identifier (UID) on the back of the IQ for future reference.

Connecting an AMIQDM Module for Dual Port Output

The AMIQDM module supports connectivity to one or two AMX switches, enabling access from twice the number of user stations without the need to cascade switches.

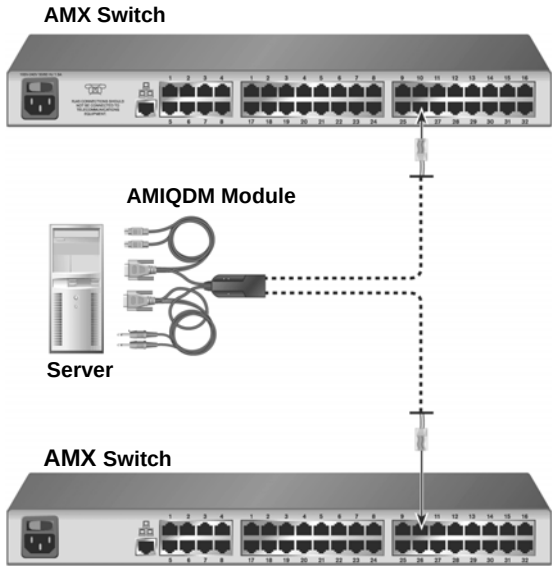

Figure 2.7: AMIQDM Module Dual Port Connectivity

To connect an AMIQDM module for dual port output:

1. Power down the target device.
2. Attach the AMIQDM module keyboard, video, mouse, audio and serial connectors into the corresponding ports on the back of the target device. Audio and serial connections may be left unconnected if this functionality is not required for the switching system.
3. Repeat step 2 for each additional target device to be connected to the AMX switch.

4. Power up the target device. When the server has completely powered up, proceed to the next step.
5. Attach one end of a UTP cable into a numbered server port on one of the AMX switches. Attach the other end into either RJ-45 port on the AMIQDM module. Repeat this step to attach the second AMX switch to the remaining RJ-45 port on the AMIQDM module.
6. If the AMX switches are not already powered, do so now.

NOTE: If a target device is unavailable through the AMX switching system, make sure that all AMX switching system target devices and components are powered up and all cables are correctly attached. If operation is not restored, test the connection with another AMIQDM module or with another port on the AMX switch.

Installing a Cascaded AMX Switching System

Multiple KVM switches can be connected to the switching system to provide access to additional target devices. You can connect target devices to up to three levels of AMX or non-Avocent KVM switches. When cascading AMX switches, you can seamlessly connect to any target device from a single list in the OSCAR interface, as if all the target devices were connected to one switch. You can also cascade non-Avocent KVM switches, but to access the attached target devices you must first select the non-Avocent switch from the OSCAR interface target list, and then connect to the target device using the methods provided by the non-Avocent KVM switch. To use seamless cascading, you will need to configure the cascaded target device as Multiple Device Mode (MDM).

Blocking and non-blocking configurations

Before setting up a cascaded AMX switching system, evaluate how many users and how many target devices are needed in your system. You can then choose how to best configure your system: as a blocking or a non-blocking configuration, or a combination.

Whether the configuration is blocking or non-blocking is determined by how user paths are connected in the switching system. In a cascaded system, UTP cable is connected from the server ports on the primary switch to the user ports on the secondary switches. To add a tertiary level of switches, UTP cable is connected from the server ports on secondary switches to the user ports on the tertiary switches (see Figure 2.9 on page 19 for an example). Each length of UTP cable acts as a path to connect users to target devices.

Blocking and non-blocking configurations are defined as follows:

- Non-blocking configuration – the number of user paths between each level of switches is equal to or greater than the number of users the primary switch supports. The maximum number of user paths are available and thus any user (with the appropriate access rights) can access any target device in the switching system at any time.
- Blocking configuration – the number of user paths between each level of switches is less than the number of users the top level switch supports. A limited number of user paths are available in this configuration, which at times might prevent or block a user from accessing a target device. However, you may be able to attach more target devices to the switching system when using a blocking configuration.

Figure 2.8 illustrates one possible blocking configuration in an AMX switching system. In this example, a four-user AMX switch is cascaded off of an eight-user AMX switch. The target devices attached to the primary switch will never be blocked and can be accessed at any time. The secondary switch has only four user paths attached to it, creating a blocking configuration. When connections are made to four of the target devices on the secondary switch, there are no more user paths available for that switch. The other users in the system can share access to the connected target devices, but they cannot connect to any other target device on that switch. Once a user closes a connection to a target device, that user path is open and can be used to connect to any target device in the switching system.

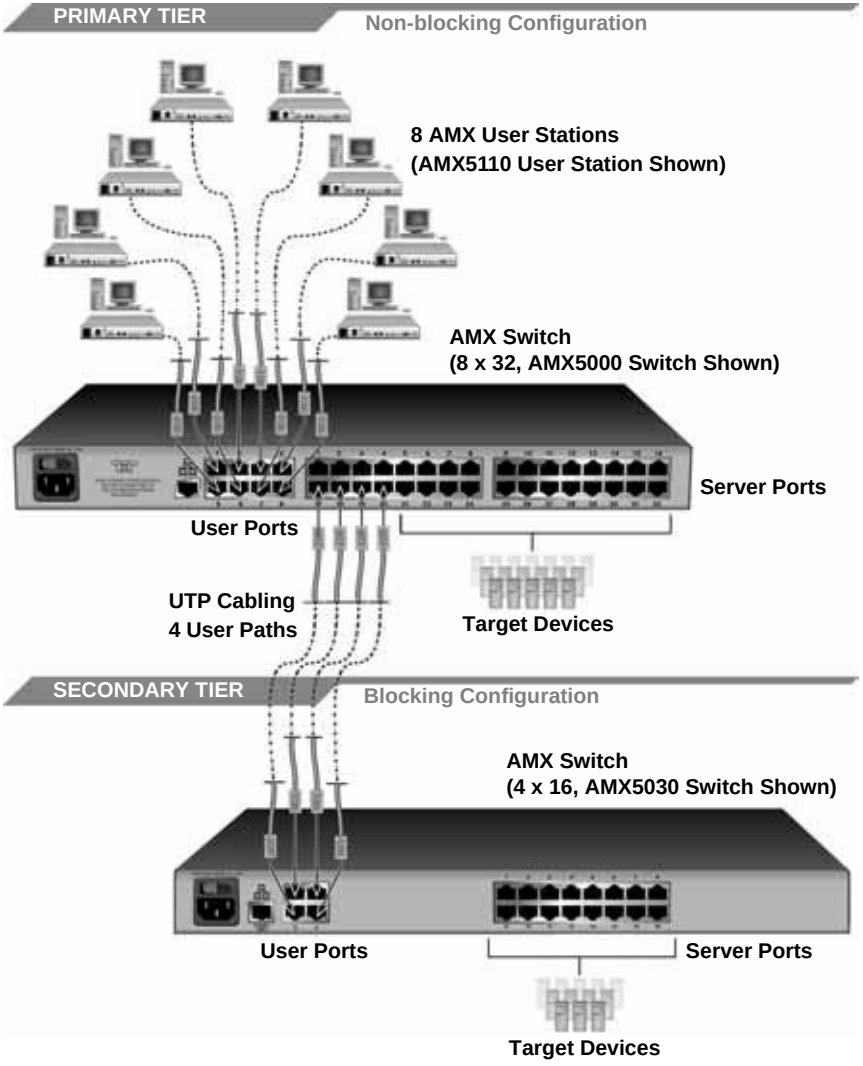

Figure 2.8: Cascaded AMX Switching System, Blocking Configuration

Figure 2.9 illustrates a cascaded AMX switching system with a combination of blocking and non-blocking configurations. In this example, the primary switch supports eight users, and eight user paths are connected to each secondary switch, creating a non-blocking configuration. The target devices attached to the secondary tier will never be blocked and can be accessed at any time. The secondary switches support eight users, but only four user paths are attached to each tertiary switch, creating a blocking configuration. Thus only four target devices on each tertiary switch can be connected to simultaneously, but these four connections can be shared among eight users. Once a user closes a connection to a target device on a tertiary switch, that user path is open and can be used to connect to any target device in the switching system.

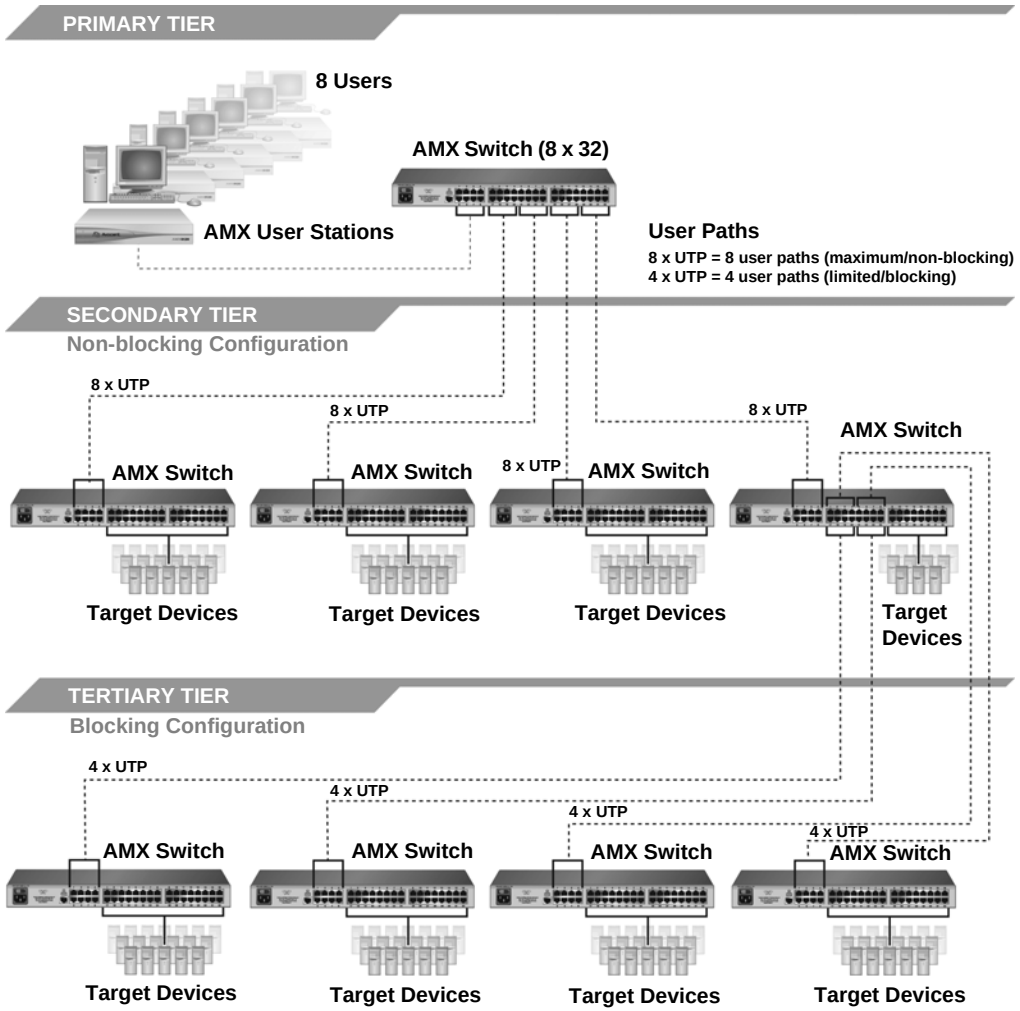

Figure 2.9: Cascaded AMX Switching System, Combination of Configurations [AMX5000 (8 x 32) Switches Shown]

Although a blocking configuration limits user access, it can provide access to additional target devices in the switching system. In a blocking configuration, all of the available user paths from the primary switch are not connected, which might leave some server ports unconnected. These server ports can be used to attach additional target devices or cascaded switches.

When setting up your switching system, you may combine blocking and non-blocking configurations. Choose the best configuration or combination of configurations for your switching system. If you choose a blocking configuration, manage user access by planning which target devices are connected to each switch. For example, you might choose to split up target devices that require frequent access among each cascaded switch so the maximum number of user paths are available to connect to that target device.

To install a cascaded AMX switching system:

1. Position the AMX switches to be attached and select a switch to be the primary switch.
2. Attach one end of a UTP cable into a server port on the primary switch. Attach the other end of the cable to a user port on a switch on the secondary tier.

   To create a non-blocking configuration, continue this process until all the appropriate number of user paths have been connected.

   To create a blocking configuration, continue this process until all of the user paths needed for your system have been connected. In a blocking configuration, user access will be limited but you may be able to attach more target devices or cascaded switches to the system. See *Blocking and non-blocking configurations* on page 17 for more information.
3. You can now connect target devices to the cascaded AMX switches (see *Connecting Target Devices to the AMX Switch* on page 12 for more information). You can also repeat steps 1 through 2 to cascade a third level of switches.

   Once you connect target devices to the switching system, you will need to configure the cascaded target devices as MDM. For more information, see *Setting Device Properties* on page 51.

To cascade other KVM switches from the AMX switch:

1. Position the switches at the desired location. Make sure that they are turned off and unplugged.
2. Insert the keyboard, video and mouse connectors of an IQ module to the corresponding local user ports on each cascaded switch.
3. Attach a UTP cable to the RJ-45 port on the IQ module. Attach the other end of the cable to an RJ-45 server port on the primary AMX switch.

NOTE: When you select the non-Avocent switch from the OSCAR interface, the OSD for that switch will open and allow you to connect to attached target devices.

Installing AMWorks Software

Once all users, target devices and switches have been attached and connected to the LAN, it's best to install the AMWorks software and synchronize it with the switching system.

If you have a previous AMWorks software version installed, it's advisable to update the switching system with the most recent version of AMWorks software. If you are updating to the AMWorks software revision 5.0.x.x (or later) from 4.x.x.x (or earlier), it is also recommended that you update the firmware on AMX switches to revision 3.x.x.x (or later). The AMX switches must be at revision 3.x.x.x or later to be fully compatible with all revisions of the AMWorks software from 5.0.x.x and later.

NOTE: If you are installing an earlier version of the AMWorks software, it's recommended that you delete the current database and then install the database of the desired version to guarantee its proper operation.

To install the AMWorks software for the first time:

1. Using a UTP cable, connect the network port on the AMWorks software server to the LAN. This server will host the AMWorks software for the switching system.
2. Insert the AMWorks software installation CD into an appropriate drive on the server and select *Setup*.
3. Follow the on-screen instructions.
4. Run the AMWorks software. You will be prompted to type a password. The default password is **password**. To change the password, refer to the AMWorks software online help program.
5. After initial installation, configure the network settings. For more information, see the AMWorks software online help program.

To update from AMWorks software revision 3.0.x.x (or earlier):

1. Ensure that the correct database information is distributed across the AMX switching system by performing a Synchronize System Database command from your existing AMWorks software installation. Use the AMWorks software database as the database reference source.
2. Make a note of all user and server groups that have been defined. This upgrade will not restore current user and server group information.
3. Stop the mySql service. You must have Administrator privileges to do this. If you are unsure about this process, contact your system administrator.
4. Uninstall the existing the AMWorks software installation.
5. Continue with the instructions provided above for installing the AMWorks software for the first time.

To update from the AMWorks software revision 4.x.x.x (or later):

1. Ensure that the correct database information is distributed across the system by performing a Synchronize System Database command from your existing installation. Use the AMWorks software database as your database source.

2. When synchronization has completed, close your version of the AMWorks software.
3. Place the installation CD for your new version of the AMWorks software into your CD drive, and select *Setup*.
4. Follow the on-screen instructions. You may install the new version of the AMWorks software over the old version, and you may choose to keep your existing database intact.
5. Proceed to *Configuring AMWorks software*.

Configuring AMWorks software

Once AMWorks software is installed, you can add or discover AMX switches and synchronize AMWorks software with the AMX switch database. You can then use the AMWorks software to manage the database and assign unique names to users, target devices and switches. For more information, see the AMWorks software online Help program.

To begin using the AMWorks software:

1. After updating the AMWorks software, follow the instructions in the AMWorks software online help program for *Discovering Devices* or *Adding Devices*. If the AMWorks software exists on the same physical network and subnet as the AMX switches, then you will only need to perform a Discover Devices command, and all of your AMX switches will be automatically discovered. If they are not automatically discovered, check that the config ID specified in the Network Settings dialog box matches the config ID specified on all of your AMX switches.

NOTE: If the AMWorks software does not recognize an attached switch as expected, refer to the troubleshooting section of the AMWorks software online help program.

2. Perform a Synchronize System Database command on your newly configured system.
   a. Choose one of your AMX switches as your database source.
   b. Select the *Overwrite* option.
   c. Click the *Start* button.
3. Update the firmware on your AMX switches, if you have not already done so. For more information on Flash upgrading, including how to verify your firmware version, see the AMWorks software online Help program. After updating firmware, proceed to step 4.

NOTE: If the AMX switches do not have the latest firmware, synchronization of the system databases may not be performed successfully.

4. If you wish to set up user groups and server groups, you may do so now.

For more information about using AMWorks software to manage the AMX switching system, see the AMWorks software online help program.

AMX Switching Systems in Broadcast Environments

The AMX switching system can be configured for a broadcast environment as illustrated in Figure 2.10. In broadcast configurations, studio operators can use Pinnacle FAK or Chryon keyboards and

have access to Deko, Chyron CG and other machines used for delivery of live content. Editing suites have access to Avid, SGI and storage machines with full media provided from these machines through an AMX switch and nVision router combination. Broadcast engineers have full access to all servers and equipment to provide maintenance and support. In addition, all valuable equipment is secured and housed in a safe environment.

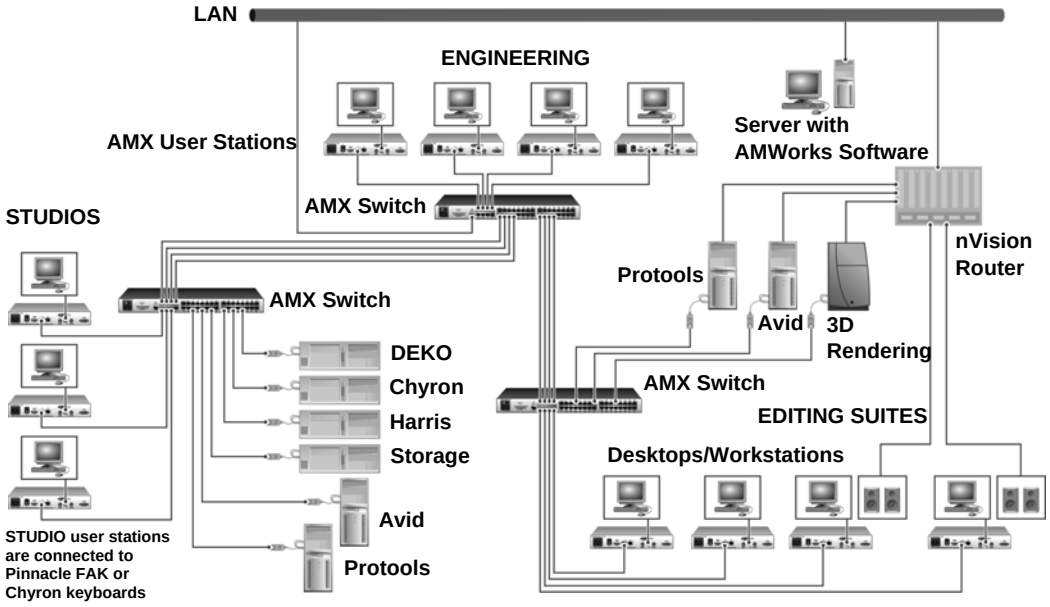

Figure 2.10: AMX Switching System in a Broadcast Environment [AMX5000 Switches, AMX5120 User Stations Shown]

Using nVision routers

You can connect an nVision router to the AMX switching system and provide video and audio routing functionality to users. A typical AMX switch and nVision router configuration is illustrated in Figure 2.10. In this configuration, when a user in the AMX switching system connects to a target device, the nVision router will automatically connect the audio and video signals from the target device to the user's workstation. Both standalone and backup nVision routers can be attached to the switching system.

Configure the nVision router in the AMWorks software by using one of the Configure Resource Router options (Define TRG, Define CRG or Define DRG). Using the Configure Resource Router feature, you can create connections tables and associate them with system servers and supported user stations, like the AMX5120, AMX5121 and AMX5130 user stations. These connection paths enable any input to be switched to any output having the same signal type. Before defining resource groups, you have the option of naming the router levels and ports on the selected router.

To connect an nVision router to the AMX switching system:

1. Using a UTP cable, connect the Pri-Controller port on the back of the nVision router to the LAN.
2. If you have not already done so, use a UTP cable to connect the network port on the AMWorks software server to the LAN.
3. If you have not already done so, use a UTP cable to connect the Network port on the back of the AMX switch to your LAN.

To set up the nVision router:

Before you can begin using the nVision router in the AMX switching system, you will need to configure the router through the serial port and set up network connections. For specific setup procedures for your nVision router, see the nVision help documentation that came with the router.

To configure the nVision router in the AMWorks software:

To properly operate the nVision router in the AMX switching system, you must configure the nVision router using AMWorks software. For more information and procedures, refer to the *Resource Switching Router* section in the AMWorks software online help program.

Flash Upgrading the AMX Switching System

Before you begin using the AMX switching system, it's best to update firmware to the most current version available. Check the Avocent web site at www.avocent.com/support for new firmware updates. Flash upgrades allow you to update the firmware of your AMX switch and incorporate new features into your existing switching system. For more information on Flash upgrading, including how to verify your firmware version, see the AMWorks software online help program.

NOTE: You must use AMWorks software to Flash upgrade the AMX switch.

Unit LEDs

Once you have installed and powered up the AMX switching system, you may check the LEDs to ensure that each unit is receiving power and that all connections are working.

AMX switch

There are three groups of LEDs on the front panel of an AMX switch.

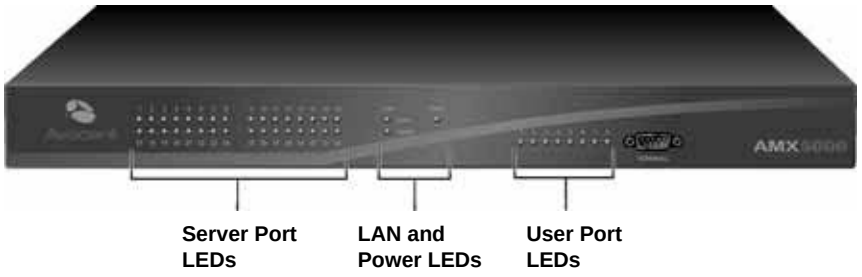

Figure 2.11: AMX Switch LEDs (AMX5000 Switch Shown)

- Server port LEDs – Each LED corresponds to a server port and illuminates in green when the server or cascaded AMX switch is attached and powered up.
- LAN and Power LEDs – The green LAN LINK LED illuminates when a valid connection is made to the network port of the AMX switch. The amber LAN *100M* LED indicates the speed of the attached LAN. This LED illuminates when a 100Mb connection is made or remains unlit when a 10Mb connection is made. The green/amber PWR LED is amber when the AMX switch is powered up and green when the AMX switch is operating.
- User port LEDs – Each LEDs correspond to a user port and illuminates in green when the AMX user station or cascaded AMX switch is attached and powered up.

AMX user station

Front panel LEDs

There are two blue LEDs on the front panel of the AMX user station.

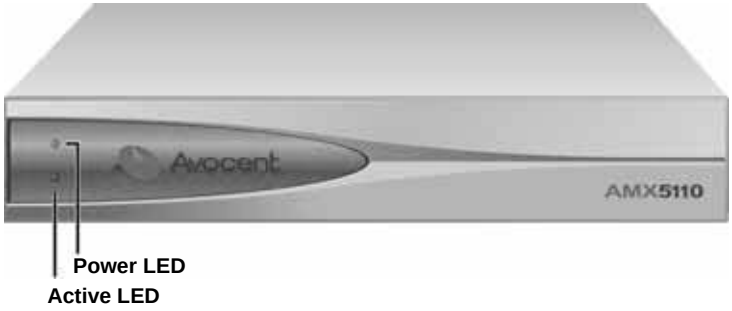

Figure 2.12: AMX User Station Front Panel (AMX5110 User Station Shown)

- Power LED – The upper LED is illuminated when power is connected and off when power is absent.
- Active LED – The lower LED blinks when the OSCAR interface is displayed and is illuminated when there is a valid connection between the AMX user station and an AMIQ or AMIQDM module or an AMX switch.

Back panel LEDs

The back panel of the AMX user station has two LEDs mounted on each RJ-45 port.

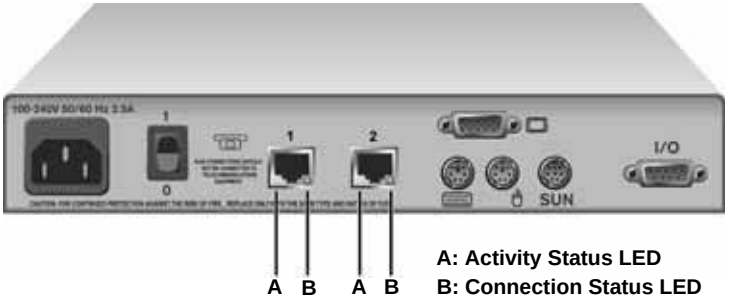

Figure 2.13: AMX User Station Back Panel (AMX5110 User Station Shown)

- Activity status LED – The yellow LEDs blinks when the link connection is active and data is being transferred and are not lit when the link connection is inactive.
- Connection status LED – The green LED is illuminated when the port is connected.

IQ module

The IQ modules have green LEDs indicating power and link status.

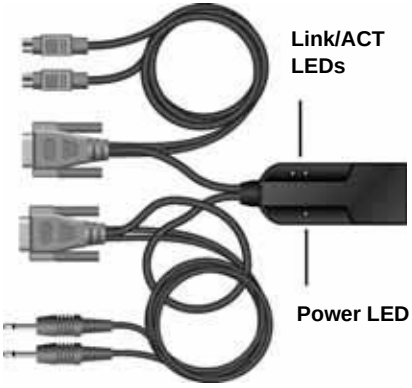

Figure 2.14: IQ Modules with LEDs (AMIQDM Module Shown)

- Power LED – The green Power LED is illuminated when power is connected. If the AMIQ-SRL module loses power, the serial interface will not generate a serial break to the attached device.
- Link/ACT LEDs – A green Link/ACT LED is illuminated when the attached server is powered, and a valid UTP connection has been made to an AMX switch. Link/ACT LEDs blink while the module is being upgraded or when a fault has been detected.

NOTE: Some first-generation IQ modules do not have a *Power* LED.

CHAPTER 3

Operations

OSCAR Interface Overview

Use the intuitive OSCAR graphical user interface to configure the switching system and select target devices. The OSCAR interface is easily accessed and always available at the desktop. Figure 3.1 illustrates an example OSCAR interface screen.

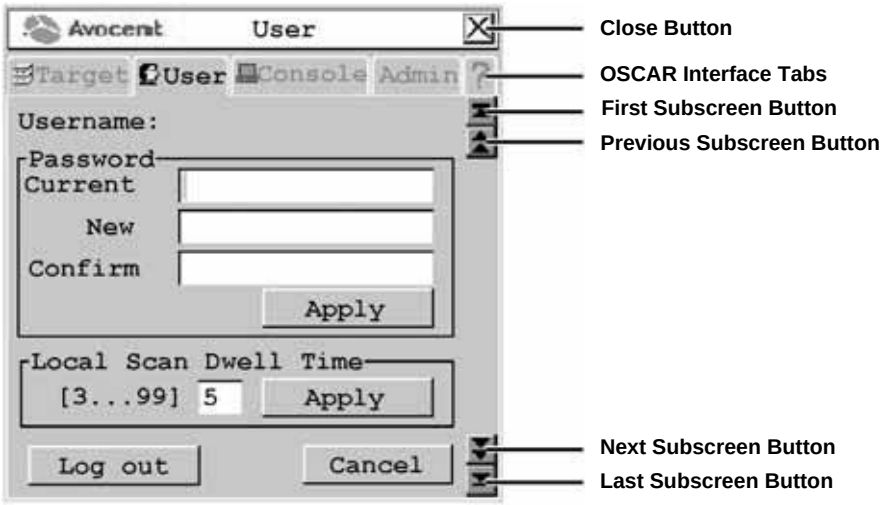

Figure 3.1: Example of the OSCAR Interface

Accessing the OSCAR interface

To launch the OSCAR interface, press the left or right **Ctrl** key twice within one second. Alternatively, you may press the **Alt** or **Shift** key twice or press **Print Screen** to launch the OSCAR interface. You may use any of these hotkey sequences instead of pressing **Ctrl+Ctrl** in any procedure in this document. To specify which hotkey sequence or set of sequences may be used to launch the OSCAR interface, see *Changing the OSCAR hotkey sequence* on page 28.

Changing the OSCAR hotkey sequence

You can set the hotkey sequence used to launch the OSCAR interface for each user station.

To change the OSCAR hotkey sequence:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to access the Configure screen.
3. Select a new hotkey sequence under the hotkey drop-down menu, or choose *All* to select all sequences. Selecting *All* will allow you to use any of the sequences in the list to launch the OSCAR interface.
4. To save changes, click *Apply.* The selected sequence changes from blue to black text. To exit the OSCAR interface, click *Cancel* or *X*.

OSCAR interface tabs

The OSCAR graphical interface consists of five main tabs: Target, User, Console, Admin and ?.

Target

The Target tab lists the target devices that can be accessed from your AMX user station and the available modes for these target devices.

User

Use the User tab to control and configure your system at the local port. The User tab screens enable you to change your password, change scan dwell time, set the target flag layout, select target device hotkey functions and configuring the audio and serial features.

Console

The Console tab is used to configure local settings for the AMX user station including country-specific keyboard layout, keyboard type, hotkey sequences and inactivity time.

Admin

The Admin tab displays options for editing user and target device information. Only users with Administrator rights can access editing screens to configure user and target device information for the AMX switching system. Any user can access editing screens for the local server. The Admin tab includes a Users Admin screen and a Device Admin screen.

- Users Admin – This screen allows the Administrator to add, edit and delete users, assign rights to each target device and force user login. For more information about user administration, see *Users* on page 37.
- Device Admin – This screen allows the Administrator to edit the device name, the keyboard emulation and layout and the IQ module MDM configuration for cascaded switches. Changes to the target device name are propagated to the IQ module immediately. The Administrator can also configure the audio and serial emulation for the selected device.

?

The ? tab provides access to the OSCAR interface help and displays the software version and name of the user station.

Target Devices

Target devices that are attached to the switching system are displayed on the Target tab. You can select a target device in Shared, Private, Scan or Maintain connection modes. If you have not logged in successfully to the AMX switching system, the target devices attached to the user station will not display in the target device list. You can access the target devices by double-clicking on *Matrix System* in the list and then logging in again.

Connection modes

Shared

If two or more users need to access the same target device, they can share access to it through the AMX switch. Sharing allows multiple users to view a target device channel at the same time, but only one can enter data through the keyboard or mouse at any given time. When the active user stops all keyboard and mouse activity, another user can take control of the target device.

Private

When you select a target device after clicking the *Private* radio button, no other user station in the switching system can switch to that target device. You can take the channel out of Private mode by switching to another target device or reselecting the same target device in Shared mode.

Scan

In Scan mode, multiple target devices can be monitored in sequence. When keyboard or mouse activity is detected, scanning stops, allowing users to operate an attached target device. Scanning will resume when keyboard or mouse activity stops.

Maintain

Use Maintain mode when you wish to remain connected to a target device while rebooting or maintaining the target device. Once selected in Maintain mode, the target device will not lose contact with the switch when power to the target device is cycled.

NOTE: Target devices in Maintain mode cannot be shared.

Accessing target devices

Use the Target tab in the OSCAR interface main dialog box to connect to target devices and to change the access mode. When you connect to a target device, the AMX switch reconfigures the keyboard and mouse to the appropriate settings for the selected target device.

To select a target device:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Target* tab.
3. Select an access mode: *Shared*, *Private*, or *Maintain*. You can also select *Scan* to scan the switching system. See *Scanning the switching system* on page 35 for more information.
4. Double-click the target device name.

   -or-

   Click the target device name and then click the *Start* button.
5. To disconnect from a selected target device, launch the OSCAR interface and click the *Clear* button or switch to another target device.

Setting a target device hotkey

You can quickly access target devices by using hotkey sequences. In Figure 3.2, a hotkey sequence of **Ctrl+F1** is set for a target device named "aSystemServer1." Whenever **Ctrl+F1** is pressed, the system will automatically switch to the designated target device.

To set or change a target device hotkey:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab. The User screen displays.
3. Click the down arrow button twice or **Ctrl + page end** to display the Server Hotkey screen.

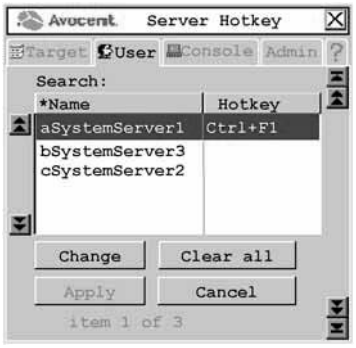

Figure 3.2: Server Hotkey Screen

4. Type the name of the target device for which you wish to set or change the associated hotkey. A list of target devices displays.

   To sort the target device list by name, click *Name*. To sort the target device list by hotkey, click *Hotkey*.
5. If you would like to remove all hotkey assignments, click *Clear All*.
6. Click the target device you wish to set or change.

7. Click the *Change* button. The Change Hotkey screen displays.

Figure 3.3: Change Hotkey Screen

8. If the selected hotkey is already assigned to a different target device, you can re-assign the selected hotkey or return to the Change Hotkey screen to select another hotkey. To clear a hotkey assignment to a target device, select the hotkey and click *Clear*.
9. Click the down arrow button and select the desired hotkey from the drop-down list.
10. To save changes, click *OK*. To exit the OSCAR interface, click *Cancel* or *X*.

Setting a quick switch hotkey for target devices

A quick switch hotkey allows you to quickly connect to target devices using a hotkey sequence relative to the placement of the target device on the OSCAR interface list. The **Ctrl+Up** hotkey sequence will connect you to a target device one above the currently connected target device on the OSCAR interface list. The **Ctrl+Down** hotkey sequence will connect you to the target device directly below the currently connected target device on the OSCAR interface list.

To enable the quick switch hotkey:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.

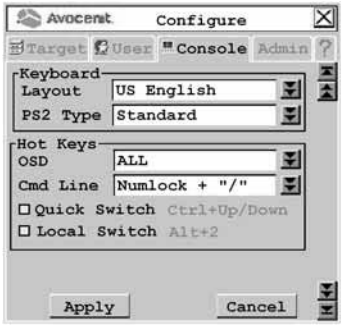

Figure 3.4: Configure Screen

3. Select *Quick Switch*.
4. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

NOTE: Quick switch hotkeys only work if there is an existing connection and the OSCAR interface is not activated.

Setting a local switch hotkey

A local switch hotkey allows you to force a connection to the local server by typing **Alt+2**.

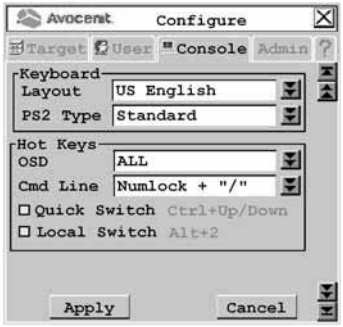

Figure 3.5: Configure Screen

To enable the local switch hotkey:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.
3. Select *Local Switch*.
4. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

NOTE: The local switch hotkey will not force a connection if two local servers are attached to the user station or if the OSCAR interface is open when the hotkey is entered.

Setting a target flag

After a connection is made to a target device, a target flag will appear briefly on screen and display the name or UID of the selected target device. Each user can configure the target flag settings according to his or her preference.

To configure the target flag:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab. The User screen displays.
3. Click the down arrow button to display the Target Flag screen.

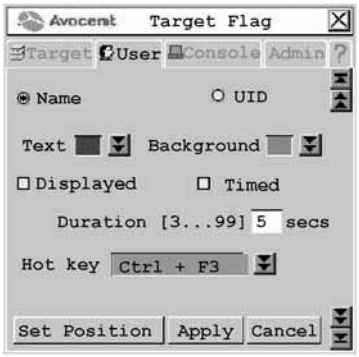

Figure 3.6: Target Flag Screen

4. Configure the target flag settings as needed.
   a. To set information – Select *Name* to display the connected target device name on the target flag.

      -or-

      Select *UID* to display the connected target device UID on the target flag.
   b. To set the text color – Select the text color for the target flag from the Text drop-down list.
   c. To set the background color – Select the background color for the target flag from the Background drop-down list.
   d. To set display properties – If you want the target flag to be displayed, select *Displayed*. If you do not want the target flag to be displayed, clear the *Displayed* checkbox.
   e. To set display time – If you want the target flag to be displayed for a certain amount of time, select *Timed* and type the desired target flag duration between 3 and 99 seconds.

      -or-

      If you want the target flag to flash briefly on screen, clear the *Timed* checkbox. The target flag will appear for less than three seconds.

f. To set a hotkey – Select a hotkey from the Hotkey drop-down list. If the target flag is displayed, entering this hotkey will hide the flag. Conversely, if the target flag is hidden, entering this hotkey will display the flag.

g. To set the flag position – Click *Set Position*. The Set Position screen displays.

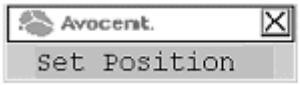

Figure 3.7: Set Position Screen

Move the target flag by dragging and dropping the title bar of the Set Position screen to a desired position.

After placing the target flag in the desired position, click *X* to set the position and return to the Target Flag screen.

-or-

Press **Esc** to return to the Target flag screen without saving the new position.

5. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

Viewing MDM target device information

The AMX switch systems supports seamless (MDM) target devices.

To view MDM target device information:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. The Device Admin screen displays.
3. Select the MDM target device for which you wish to view version, configuration and connection information.
4. Click the *Edit Device* button.The Edit Device screen displays.
5. Click the *Info* button. The Information screen displays.

Figure 3.8: Information Screen

6. To return to the Device Admin screen, click *Close*. To exit the OSCAR interface, click *X*.

Scanning the switching system

You can use the Scan connection mode to monitor multiple target devices in sequence.

To scan an AMX switching system:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Target* tab, then select *Scan*.

Figure 3.9: Target Screen

3. Press and hold the **Ctrl** key while you individually select the target devices that you would like to scan. Alternately, if you wish to select a group of target devices in sequence, you can click the first target device in the sequence, press and hold the **Shift** key and select the last target device to highlight the group. Clicking *Clear* will deselect all of target devices in the list.
4. Click the *Start* button to begin scanning.

Once scanning is initiated, the AMX switch will cycle through the selected target devices in alphabetical order.

If the user has full access rights to the current target device and the AMX user station detects keyboard or mouse activity, scanning is suspended. This allows the user to work with the target device. When mouse and keyboard activity stops, scanning resumes with the next channel in sequence. If the user has view only access rights to the current target device, scanning will not be suspended if the user types on the keyboard or moves the mouse.

Dwell time, the length of time each server channel remains on screen, is configurable and can be changed at any time through the User tab. Default dwell time is three seconds.

To stop scanning the switching system:

1. Press **Ctrl+Ctrl**. The Target tab screen redisplays.
2. Click the *Stop* button.
3. Click *Close* or *X* to exit the OSCAR interface.

To change the scan dwell time:

NOTE: If the lockdown mode is on, none of the fields in this screen will be active, with the exception of the log out button.

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab.

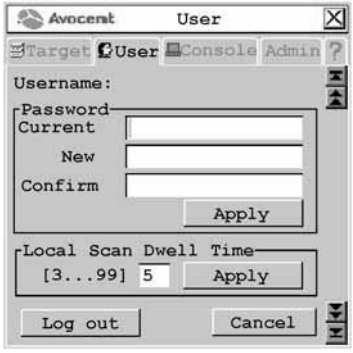

Figure 3.10: User Screen

3. Change the scan dwell time, designated in seconds, by typing a number between 3 and 99.
4. To save changes, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

Users

The AMX switching system can be configured to support up to 128 users. Each user is identified by a unique name and password and can be assigned full, view only or no rights to target devices attached to the AMX switch.

Logging in as a user

Each user can set or change the password for his or her login. Administrators can reset passwords for each user if needed and can allow specific users to have a blank password.

When the AMX user station is powered, you are prompted for your username and password. Passwords must be 6 to 15 characters, or 0 characters if a blank password is enabled for that user. All ASCII characters can be used in the login prompt. The characters (‘ ^ ~) must be typed twice before they display in the password field.

Once you have entered your login name and password, the OSCAR interface is displayed. You can change your password at any time using the OSCAR interface. However, if you used the AMWorks software to configure user authentication through LDAP, you might need to change the user’s password on your Enterprise Server (for example, Active Directory server) instead of the OSCAR interface.

If you have not logged in successfully, the OSCAR interface displays the Matrix System label and the names of locally connected servers in the target device list. Double-clicking *Matrix System* switches you to the login dialog box, where you may re-attempt to log in.

To change your user password:

NOTE: If the lockdown mode is on, none of the fields in this screen will be active, with the exception of the log out button.

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab.

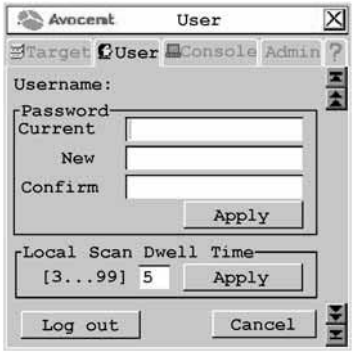

Figure 3.11: User Screen

3. Enter your current password.
4. Enter your new password and verify it in the fields provided. Your password must be at least six characters in length.

NOTE: If you lose your password, contact Avocent Technical Support for assistance.

5. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

Logging out

To log out of the AMX switching system:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab.
3. Click *Log out*. The OSCAR interface logs out of the switching system and closes automatically.

Managing the user database

To manage the user database, users must be logged as the Administrator. You may also use the AMWorks software to manage the database.

To add a user:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab.
3. Click the down arrow button to display the User Admin screen. A list of users displays.

Figure 3.12: User Admin Screen

4. Click the *Add user* button. The Add User screen displays.

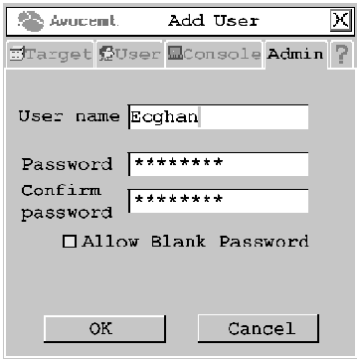

Figure 3.13: Add User Screen

5. Enter the name of the user in the User name field.
6. Enter the user's password and confirm it in the provided fields.

   -or-

   Select *Allow Blank Password* to enable the user to log in without entering a password.
7. To save changes, click *OK*. To exit the OSCAR interface, click *Cancel* or *X*.

To delete a user:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab.
3. Click the down arrow button to display the User Admin screen.
4. Select the user you wish to delete.
5. Click the *Delete user* button.
6. When you are prompted to complete the deletion, click *Yes* or *No*.
7. Click *Close* or *X* to exit the OSCAR interface.

Administering security settings

To modify security settings, users must be logged as the Administrator. You may also use the AMWorks software to administer settings.

By default all user stations are automatically logged in using the Administrator username and password. To restrict access to security settings, enable Force User Login to require all users to log in with a username and password each time the user station is accessed.

To edit a user:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab.
3. Click the down arrow button to display the User Admin screen.

4. Select the user you wish to edit. Click the *Edit User* button. The Edit User screen displays.

Figure 3.14: Edit User Screen - Normal User

5. You may change the user's name or password or allow blank passwords.
6. To save changes, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

To set user access rights:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. Click the down arrow button to display the User Admin screen.
3. Select the user for which you wish to grant access rights.
4. Click the *User rights* button. The User Rights screen displays.

Figure 3.15: User Rights Screen

5. To change a user's access rights to a single target device, click the target from the list of available target devices. Select the appropriate access level: *none*, *view* or *full*.

   - or -

To change a user's access rights to multiple target devices, press and hold the **Ctrl** key while you individually select the target devices that you wish to be controlled externally. Alternately, if you wish to select a group of target devices in sequence, click the first target device in the sequence, press and hold the **Shift** key and select the last target device to highlight the group. Then select the appropriate access level: *none*, *view* or *full*.

6. Press and hold the **Ctrl** key while you individually select the target devices that you wish to be controlled externally. Alternately, if you wish to select a group of target devices in sequence, click the first target device in the sequence, press and hold the **Shift** key and select the last target device to highlight the group.

NOTE: User rights must be assigned to each MDM IQ module and MDM target device.

7. Click *OK* to save changes and return to the User Admin screen. You may select another user to configure access rights or click *Close* or *X* to exit the OSCAR interface.

To force user login:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab.
3. Click the down arrow button to display the User Admin screen.
4. Select *admin* from the list and click the *Edit user* button. The Edit User screen displays.

Figure 3.16: Edit User Screen - Admin User

5. If a password has not yet been assigned to *admin*, create one now by typing a password in the Password and Confirm Password fields.
6. Select *Force User Login* to force all users to log in with a username and password.
7. To save changes and return to the User Admin screen, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

Configuring Keyboard Settings

You can use keyboard layouts from multiple countries and regions in the AMX switching system. The AMX switch also supports multiple keyboard types, including any PS/2, USB or Sun keyboard, Pinnacle FAK or Chryon Duet.

Keyboard layout

User station

To designate the country-specific layout for the keyboard attached to the user station, access the Console tab in the OSCAR interface. Table 4.2 lists supported keyboard layouts on the AMX user station. To change the keyboard type, see *Keyboard type* on page 44.

Table 3.1: Available Keyboard Layouts on the AMX User Station

Keyboard Layouts	
US English	Japanese
Belgian	Korean
Canadian-French	Norwegian
Danish	Portuguese
Dutch	Spanish
Finnish	Swedish
French	Swiss-French
German	Swiss-German
Greek	United Kingdom
Italian	

To configure keyboard layout for the user station:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.

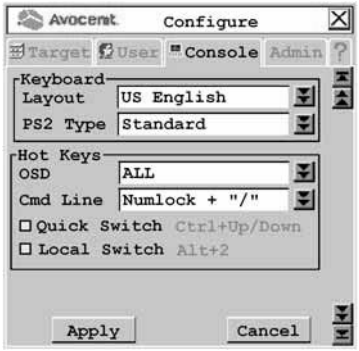

Figure 3.17: Configure Screen

3. Select a keyboard layout from the Layout drop-down menu.
4. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

Device

When connecting a non-U.S. 13W3, VGA Sun or USB server to an AMX switching system, you must manually set the keyboard for that target device. Table 3.2 lists supported keyboard layouts for USB and Sun IQ modules. For more information, see *Setting Device Properties* on page 51.

Table 3.2: Available Keyboard Layouts on USB and Sun IQ Modules

Keyboard Layouts	
US English	Korean
Belgian	Norwegian
Canadian-French	Portuguese
Danish	Russian
Dutch	Spanish
Finnish	Swedish
French	Swiss-French
German	Swiss-German
Greek	Taiwanese
Italian	United Kingdom
Japanese	

Keyboard type

If you connected a PS/2, USB or Sun keyboard to the user station, you will not have to change the keyboard type. If you connected a Pinnacle FAK or Chyron Duet keyboard to the user station, complete the following steps to set the keyboard type.

To set the keyboard type on the user station:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.
3. The Type field displays the current keyboard type. The Type field changes to PS/2 Type if your AMX switching system includes an AMX5130 user station.

   The Type or PS/2 Type field is activated if your AMX switching system includes an AMX5120/AMX5130 user station connected to a PS/2 keyboard. The Type or PS/2 Type field is deactivated in the following cases:

   - Your system includes an AMX5100 or AMX5110 user station and is connected to a PS/2 keyboard. In this case, *Standard* is displayed in the Type field.
   - Your system includes any version of the AMX user station and is connected to a Sun keyboard. In this case, *Sun* is displayed in the Type field.

   If the Type or PS/2 Type field is activated, select *Standard*, *Pinnacle FAK* or *Chyron*. The change will be highlighted in blue text.

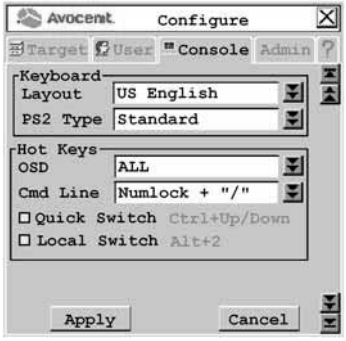

Figure 3.18: Console Screen

NOTE: Standard refers to any keyboard. If your AMX5130 user station is connected to a Pinnacle FAK or Chyron Duet keyboard, you must select *Pinnacle FAK* or *Chyron Duet* in the PS/2 Type field to enable support for this keyboard. If your AMX switching system has connections to both PS/2 and USB keyboards, the USB keyboard takes precedence when both keyboards are used simultaneously.

   Select the appropriate keyboard type from the Type drop-down menu. The drop-down menu only allows you to select keyboard types that the connected user station supports.
4. Click *Apply* to save changes.

-or-

Click *Cancel* to exit the OSCAR interface without saving changes

5. If you connected a Pinnacle FAK keyboard, complete the following steps:
   a. Click the *Admin* tab.
   b. Select the target device that will be running software that requires Pinnacle FAK support.
   c. Click *Edit device*.
   d. Select *Pinnacle FAK* from the Emulation drop-down menu. You can only edit the emulation mode if the device-type is PS/2. (If you are using a Chyron Duet keyboard, the Emulation mode should be Standard.)
6. To save changes, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

Keyboard translation

The AMX user station allows you to use PS/2, USB or Sun keyboards to operate any type of attached target device. However, when crossing platforms, certain keys will need to be remapped in order to provide all of the functions available on the keyboard native to that platform.

For example, if you access a Sun workstation with a PS/2 keyboard, you will notice that the PS/2 keyboard does not have the **Stop** and **Again** keys that are on a true Sun keyboard. By enabling the Scroll Lock mode by pressing **Ctrl-Alt-Shift** and **Scroll Lock** at the same time, the **F1** and **F2** keys on the PS/2 keyboard function as the Sun **Stop** and **Again** keys. With Scroll Lock mode disabled, **F1** and **F2** function normally.

NOTE: The *Scroll Lock* LED blinks if the mode is enabled.

Table 3.3 shows the translations for a PS/2 keyboard to a Sun server. All mapped functions will only be valid when the Scroll Lock mode is enabled.

Table 3.3: PS/2 Keyboard to Sun Server

Key	Sun	Key	Sun
F1	Stop	F9	Find
F2	Again	F10	Cut
F3	Props	F11	Power
F4	Undo	F12	Command
F5	Front	keypad *	Compose
F6	Copy	NUMLOCK	Help
F7	Open	keyboard /	Mute
F8	Paste	keyboard -	Vol -
F8	Paste	keyboard +	Vol +

Using the Power/Sleep key

Table 3.4 shows the Power/Sleep key on USB servers for Sun and PS/2 keyboards. Sun keyboards have a Power key used to power the workstation. Some PS/2 keyboards have a Sleep key to place the server in a stand-by or power saving mode.

Table 3.4: Power/Sleep for USB Servers

Keyboard	Peripheral Key	Scroll Lock Mode	Server
PS/2	Shift - F11	Enabled	Win 98/2000
	F11	Enabled	Win 98/Mac
	Sleep	Enabled	Win 98/Mac
Sun	Power	Enabled	Win 98/2000
	Power	Enabled	Win 98/Mac

To issue the Power/Sleep command:

Enable the Scroll Lock mode and press **F11** (or the **Sleep** key) on a PS/2 keyboard.

-or-

For a Sun server, press the **Power** key.

Using Audio and Serial Data Emulation

Some AMX user stations and devices support audio and serial data emulation. In order for a user to receive audio and serial data, the following conditions must exist:

- The user must be logged into a user station that supports audio and serial emulation, such as the AMX5130 user station.
- The user must be accessing a device that has been enabled by the Administrator to output audio and serial data.
- The target device must be connected to an AMIQDM module.

Each user can configure the audio and serial settings that will be available when he or she logs in.

To view and modify audio and serial settings for a user:

CAUTION: Switching to an audio source that is set at high volume might harm your hearing.

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *User* tab. Click the down arrow button to display the Audio/Serial screen.

NOTE: Selected settings in the Audio/Serial screen indicate a default status of *on* (enabled).

Figure 3.19: Audio/Serial Screen (User Tab)

3. Click the checkboxes to enable or disable speakers, microphone or serial emulation.
4. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

To view and modify admin audio and serial settings for a device:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. The Device Admin screen displays.

NOTE: The Device Admin screen will display only the devices that are currently attached to the switching system and powered. Only the Administrator can edit Device attributes.

3. A list of devices will display. In the Find field, click *name* to search by name.

   - or -

   Click *UID* to search by UID.

NOTE: If a name has not been set for the device, a default name will be displayed. Clicking the *Reset name* button sets the device name back to its default.

4. Select the device you wish to edit and click the *Edit Device* button. The Edit Device screen displays.
5. Click the down arrow button to display the Audio/Serial screen.

Figure 3.20: Audio/Serial Screen (Admin Tab)

NOTE: The first time this screen is accessed, the Audio out, Audio in and Serial checkboxes will be checked (enabled) for devices that are multimedia-capable.

6. Click the *Audio out* (speakers), *Audio in* (mic) or *Serial* checkboxes to enable or disable as required for the selected device.
7. To save changes, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

Viewing IQ Module Version Information

When Flash upgrading your AMX switching system, check the IQ module version to determine if firmware updates are needed.

To view IQ module information:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. The Device Admin screen displays.
3. Select the IQ module for which you wish to view version, configuration and connection information.
4. Click the *Edit device* button. The Edit Device screen displays.
5. Click the *Info* button. The Information screen displays.

Figure 3.21: Information Screen

6. Click *Close* to return to the Device Admin screen.
7. Click *Cancel* or *X* to exit the OSCAR interface.

To modify IQ module properties, see *Setting Device Properties* on page 51.

User Stations

You can configure settings specific to your user station by accessing the Console tab.

To view the user station status:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab. The Status screen displays the connection status of the AMX user station.

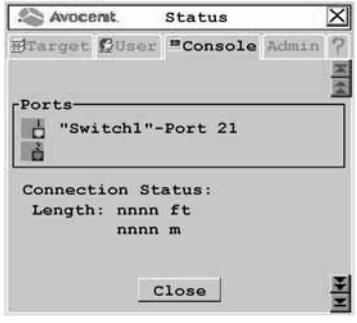

Figure 3.22: Status Screen

3. Click *Close* or *X* to exit the OSCAR interface.

Locking user station settings

The Administrator may lock specific settings for each user station. Lockdown settings cannot be accessed by other users. See *Administering security settings* on page 39 for more information.

To enable lockdown settings:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Enable Force User Login, if necessary. See *Administering security settings* on page 39 for more information.
3. Click the *Console* tab, then click the down arrow button to display the Lockdown screen.

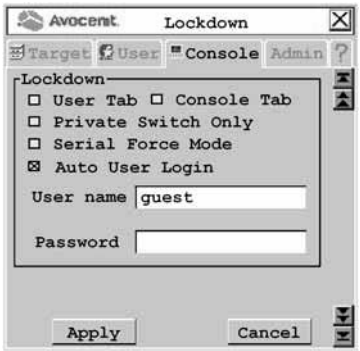

Figure 3.23: Lockdown Screen (Settings for the AMX5130 User Station Shown)

NOTE: Available lockdown settings vary by user station model. Only the lockdown settings supported on the user station you are configuring will be displayed.

4. Select or deselect any of the following settings as needed:
   - Select *User Tab* to prevent changes to the User tab.
   - Select *Console Tab* to prevent changes to the console data.
   - Select *Private Switch Only* to force Private mode connections to target devices.
   - Select *Serial Force Mode* to allow forced connections through the serial port. Using force connect commands, you can force a user station to connect to a target device through the serial port. See *Forcing a Connection to a Target Device* on page 59 for more information.
   - Select *Auto User Login* to force the user station to automatically log in a specific username each time there is a power cycle or hotplug. Enter the username and password in the fields provided to specify which user is automatically logged in.

     Any user can disable auto user login by entering **disable auto user login** at the Command Line. See *OSD Command Line Operations* on page 54 and *Disabling Auto User Login* on page 56 for more information.
5. To save changes, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

User station inactivity settings

Use the Screen Saver, Logout and Inactivity Time options to control the behavior of your console during periods of inactivity. You can choose to display your screen saver or have your system log out when the time period designated in the Inactivity Time field has expired.

To configure your console for inactivity time:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Inactivity screen.

Figure 3.24: Inactivity Screen

3. To display the screen saver after the specified period of inactivity time has elapsed, select *Screen Saver.*
4. To log your username out of the switching system after the specified period of inactivity time has elapsed, select *Logout*.
5. Enter the amount of time the user station will allow inactivity before applying the screen saver and/or log out settings.
6. To save changes, click *Apply.* To exit the OSCAR interface, click *Cancel* or *X*.

Setting Device Properties

The AMX switching system automatically recognizes all attached devices by their UID numbers, including seamless (MDM) IQ modules and MDM target devices. Depending on the device type and connection, the screens on the Admin tab allow you to view and change settings for devices in normal and seamless configurations.

To edit a device (normal configuration):

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. The Device Admin screen displays.

NOTE: The Device Admin screen will display only the devices that are currently attached to the switching system and powered. Only the Administrator can edit device attributes.

Figure 3.25: Device Admin Screen

3. A list of devices, including target devices and IQ modules, will display. In the Find field, click *name* to search by name.

   - or -

   Click *UID* to search by UID.

NOTE: If a name has not been set for the device, a default name will be displayed. Clicking the *Reset name* button sets the device name to its default name.

4. Select the device you wish to edit and click the *Edit Device* button. The Edit Device screen displays.

Figure 3.26: Edit Device Screen (Normal Configuration)

The UID and Type fields are not editable. The Type field displays the type of device being edited, including one of the following:

- PS/2 Single-Port

- SUN Single-Port
- USB Single-Port
- PS/2 Dual-Port
- SUN Dual-Port
- USB Dual-Port
- Serial Single-Port
- MDM target device

5. Type a new name (1-15 characters) for the device in the Name field.
6. If the device is an AMIQ-USB/AMIQDM-USB module or AMIQ-VSN/AMIQDM-VSN module, select a keyboard country layout, shown in Table 3.1 on page 42, from the Layout drop-down list. For all other devices, this field is disabled.
7. If the device is an AMIQ-USB/AMIQDM-USB module or AMIQ-VSN/AMIQDM-VSN module, select the emulation setting for the device from the Emulation drop-down list. For all other devices, the field is disabled.
8. To save changes and return to the Device Admin screen, click *Apply*. To exit the OSCAR interface, click *Cancel* or *X*.

To edit a device (seamless configuration):

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Admin* tab. The Device Admin screen displays.

NOTE: The Device Admin screen will display only the devices that are currently attached to the switching system and powered. Only the Administrator can edit device attributes.

3. From the drop-down list, select the device you wish to edit.
4. Click the *Edit Device* button. The Edit Device screen displays.
5. Type a new name (1-15 characters) for the device in the Name field.

   From the Target drop-down list, select the cascaded Avocent KVM switch to which the IQ module is attached.

   - or -

   Select *KVM Switch* if the cascaded switch is a non-Avocent switch.

Figure 3.27: Edit Device Screen (Seamless Configuration)

6. In the MDM Switch area, select the number of ports on the cascaded KVM switch from the Ports drop-down list.
7. In the MDM Switch area, select the hotkey sequence of the cascaded KVM switch from the Hotkey drop-down list.
8. To save changes, click *Apply* save changes. The IQ module briefly disappears from the list, then reappears with the MDM target devices that represent each port on the cascaded switch.
9. Repeat steps 3-5 to rename each MDM target device. Click *Apply* for each MDM target device on the list.
10. (Optional) Edit additional MDM IQ modules by repeating steps 3-10.
11. Click *Close* or *X* to exit the OSCAR interface.

OSD Command Line Operations

The OSD Command Line allows you to enter commands to administer the AMX switching system.

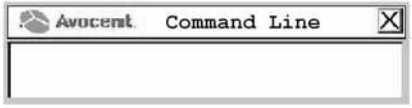

Figure 3.28: Command Line Screen

Accessing the Command Line

Table 4.3 provides a list of hotkey sequences used to activate the Command Line. The default Command Line hotkey sequence is the **NumLock** key pressed and held, followed by the **Minus** (-) key. You can set the following hotkey sequences from the list available on the Console tab.

Table 3.5: OSD Command Line Hotkey Sequences

Sequence	Keystroke Description
NumLock + "-"	**NumLock** key, pressed and held, followed by the **Minus** (-) key
NumLock + "/"	**NumLock** key, pressed and held, followed by the **Slash** (/) key
NumLock + "+"	**NumLock** key, pressed and held, followed by the **Plus** (+) key
NumLock + "*"	**NumLock** key, pressed and held, followed by the **Asterisk** (*) key

To change the OSCAR interface command line sequence:

1. Press **Ctrl+Ctrl** to launch the OSCAR interface.
2. Click the *Console* tab, then click the down arrow button to display the Configure screen.

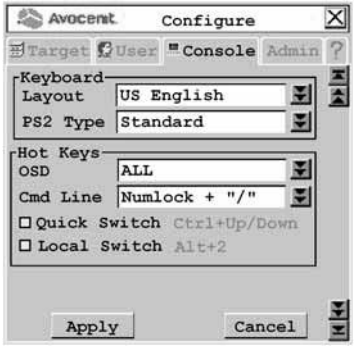

Figure 3.29: Configure Screen

3. Click the Cmd Line drop-down menu and select a command line.
4. To save changes, click *Apply*. The selected sequence changes from black to blue text. To exit the OSCAR interface, click *Cancel* or *X*.

Resetting the keyboard and mouse

Should you lose keyboard and mouse connectivity, you can use the Command Line to quickly restore default settings for the keyboard and mouse attached to the user station you are currently logged in to.

To reset the keyboard and mouse:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **rk** and press **Enter** to reset the keyboard.

   - or -

   Type **rm** and press **Enter** to reset the mouse.

Disabling Auto User Login

Auto User Login at the user station can only be enabled by the Administrator, but it can be disabled by any user.

To disable auto user login:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **disable auto user login** and press **Enter.**

See *Locking user station settings* on page 50 for more information about Auto User Login settings.

Equalization tuning

To adjust the video quality of the monitor connected to your user station, you may manually tune the equalization values that are applied during video compensation.

To edit equalization offset values:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **equalization tuning** and press **Enter.** The Equalization Tuning screen will be displayed.

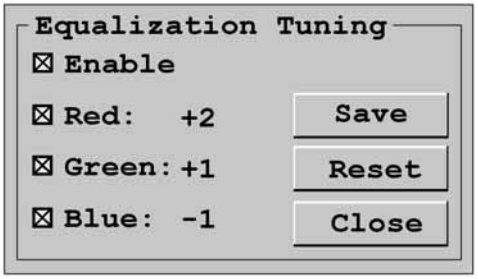

Figure 3.30: Equalization Tuning Screen

3. Select *Enable* to allow manual adjustment of equalization offset values.
4. Select the color(s) you wish to adjust. You may adjust colors individually or as a group.
5. To increase the offset value of the selected color(s) by increments of one, use the **Up** key or **Plus** key.

   To decrease the offset value of the selected color(s) by increments of minus one, use the **Down** key or **Minus** key.

If you are currently connected to a target device, the offset values will be immediately applied to the video signal.

6. If you wish to save the current equalization tuning settings, click *Save*. The equalization tuning settings will be permanently stored on the user station and will be applied to the video signal each time you connect to a target device.

   -or-

   If you do not wish to save changes to the user station, click *Close*. The equalization tuning will apply to the video signal of the currently connected target device until the connection is closed.

   -or-

   If you want to reset the equalization tuning values to zero and disable equalization tuning, click *Reset*.

NOTE: If equalization tuning is not supported on your user station, you will not be able to access the Equalization Tuning screen.

Deskew tuning

To adjust the video quality of the monitor connected to your user station, you may manually adjust the deskew values that are applied during video compensation.

To edit deskew values:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **deskew tuning** and press **Enter.** The DeSkew Tuning screen will be displayed.

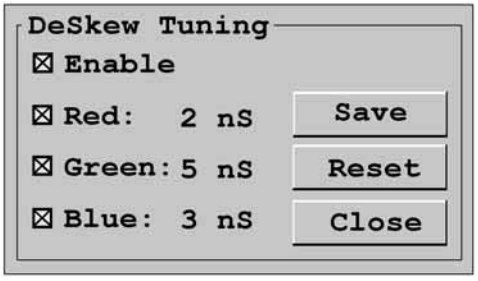

Figure 3.31: Deskew Tuning Screen

3. Select *Enable* to allow manual adjustment of deskew values.
4. Select the color(s) you wish to adjust. You may adjust colors individually or as a group.
5. To increase the deskew value of the selected color(s) by increments of one, use the **Up** key or **Plus** key.

   To decrease the deskew value of the selected color(s) by increments of minus one, use the **Down** key or **Minus** key.

If you are currently connected to a target device, the deskew values will be immediately applied to the video signal.

6. If you wish to save the current deskew settings, click *Save*. The deskew settings will be permanently stored on the user station and will be applied to the video signal each time you connect to a target device.

   -or-

   If you do not wish to save changes to the user station, click *Close*. The deskew tuning will apply to the video signal of the currently connected target device until the connection is closed.

   -or-

   If you want to reset the deskew values to zero and disable deskew tuning, click *Reset*.

NOTE: If deskew tuning is not supported on your user station, you will not be able to access the Deskew Tuning screen.

Configuring the DDC table

The Display Data Channel (DDC), specified by Video Electronics Standards Association (VESA), is a communication interface between a server display, such as a monitor or IQ module, and a host system, such as PC or workstation. You can choose to use the default DDC table or nVidia DDC table.

CAUTION: If you are unsure of what DDC table is needed for your system, do not change the DDC table setting. Contact your system administrator or Avocent Technical Support for more information about configuring the DDC table.

To configure the DDC table:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **ddctable '[servername]' default** and press **Enter** to set the IQ module with the specified servername to use the default DDC table.
3. Type **ddctable '[servername]' nVidia** and press **Enter** to set the IQ module with the specified servername to use the nVidia DDC table.

NOTE: The servername is the name of the IQ module and should be entered exactly as it displays in the target list. Single quotes are required before and after the servername. The following is an example of the command for a typical configuration DDC table: ddctable 'Server 43' nVidia.

Persistent mode

The persistent mode setting allows a user station to use stored UID and connection type values to re-establish a lost connection.

To set the persistent mode:

1. Press the default Command Line hotkey sequence to display the Command Line.

2. Type **enable persistent mode** and press **Enter** to store the UID and connection type of a target device.

   - or -

   Type **disable persistent mode** and press **Enter** to disable the persistent mode setting.

To view the persistent mode:

1. Press the default Command Line hotkey sequence to display the Command Line.
2. Type **show persistent mode** and press **Enter** to display the current persistent mode setting. If the persistent mode is enabled, the current stored UID and connection type settings are also displayed.

Forcing a Connection to a Target Device

From the user station, you can force any user station in the switching system to connect to a target device. The host user station sends force connect and disconnect commands. When using Serial Force mode, the host user station must be connected to the serial device. The target user station receives the command and force connects to or disconnect from a target device. Any user station in the switching system, including the host, may act as the target user station.

You can force a connection using any of the following methods:

- Forcing a connection using the Command Line
- Forcing a connection using Serial Force mode
- Forcing a connection using SNMP

Guidelines

NOTE: The following guidelines do not apply when forcing a connection using SNMP.

All forced connections are done in Shared mode. For optimum operation of the force connection feature, observe the following guidelines:

- Both the user entering the command and the user at the target user station must have rights to the target device.
- All user stations and IQ modules must have unique names.
- If the host and target user stations are connected to different AMX switches, the AMX switching system must be synchronized using the AMWorks software.
- (Serial Force mode only) To prevent the host user station from automatically logging out, the Inactivity Timer Disconnect function must be disabled. See *User station inactivity settings* on page 51 for more information.
- (Serial Force mode only) If Force User Login is enabled, a user must be logged in. See *Administering security settings* on page 39 for more information.

Force connect and force disconnect commands

The force connect and force disconnect commands contain two user-defined variables: the [TargetUserStationName] and the [servername]. Single quotes are required before and after each variable. The following is an example of a force connect command: **fc 'User Station 3' 'Server 43'**.

- [TargetUserStationName] - the name of the user station that you wish to connect to or disconnect from the target device.

  To determine the name of the user station, launch the OSCAR interface and click the *?* tab. Press the **End** key to view the unit name at the bottom of the screen. When entering a force connect or disconnect command, replace [TargetUserStationName] with the unit name.

- [servername] - the name of the target device to which you wish the user station to force a connection or disconnection.

  The server name is stored on the IQ module and is displayed in the list on the Target tab of the OSCAR interface. When entering a force connect or disconnect command, replace [servername] with the appropriate target device name from the Target list.

Forcing a connection using the OSD Command Line

To force a user station to make or break a connection:

1. Press the default Command Line hotkey sequence to display the Command Line. For more information see *Accessing the Command Line* on page 55.
2. Type **fc '[TargetUserStationName]' '[servername]'** and press **Enter** to force the target user station to connect to the specified target device.

   -or-

   Type **fd '[TargetUserStationName]'** and press **Enter** to force the target user station to disconnect from the connected target device.

Forcing a connection from the serial port to a target device

Once Serial Force mode is enabled, a serial device attached to the host user station can send a force connect or disconnect command to that user station. The host user station will then force the target user station to either connect to or disconnect from a target device.

To enable Serial Force mode:

Select *Serial Force Mode* on the lockdown settings for the user station. See *Locking user station settings* on page 50 for more information.

-or-

Enter **enable serial force mode** at the Command Line. See *OSD Command Line Operations* on page 54 for more information.

Serial parameters

Once Serial Force mode is enabled, the serial port parameters are set to:

- 9600 baud
- 8 data bits
- no parity
- 1 stop bit
- no flow control

These parameters cannot be changed. The serial configuration settings of the serial device attached to the host user station must match these parameters.

To disable Serial Force mode:

Deselect *Serial Force Mode* on the lockdown settings for the user station. See *Locking user station settings* on page 50 for more information.

-or-

Enter **disable serial force mode** at the Command Line. See *OSD Command Line Operations* on page 54 for more information.

Once disabled, the serial baud rate will be changed to 57600. The serial emulation will change to the current value for the user's settings.

To force a user station to make a connection:

1. Make sure that the serial device is configured appropriately. See *Serial parameters* on page 61 for more information.
2. From the attached serial device, send an **fc '[TargetUserStationName]' '[servername]'** command to the host user station followed by a carriage return character **[0x0D]**. This will force the target user station to connect to the specified target device.

   -or-

   From the attached serial device, send an **fcc '[TargetUserStationName]' '[servername]'** command to the host user station followed by a carriage return character **[0x0D]**. This will force the target user station to connect to the specified target device. In addition, the user station will send a numeric confirmation code indicating the outcome of the command. See Table 3.6 for code definitions.

To force a user station to break a connection:

1. Make sure that the serial device is configured appropriately. See *Serial parameters* on page 61 for more information.
2. From the attached serial device, send an **fd '[TargetUserStationName]'** command to the host user station followed by a carriage return character **[0x0D]**. This will force the target user station to disconnect from the target device.

   -or-

From the attached serial device, send an **fdc '[TargetUserStationName]'** command to the host user station followed by a carriage return character **[0x0D]**. This will force the target user station to disconnect from the specified target device. In addition, the user station will send a numeric confirmation code indicating the outcome of the command. See Table 3.7 for code definitions.

Confirmation codes

If you use the fcc or fdc commands, you will receive a numeric confirmation code indicating the outcome of the command. See Table 3.6 and Table 3.7 for confirmation codes and corresponding definitions.

Table 3.6: Force Connect Confirmation Codes

Code	Definition
0	The command was valid. The target device was found and the user has connection rights to that target device.
1	Invalid syntax. The command was not entered correctly.
2	The specified target device was not found.
3	The user does not have connection rights to the specified target device.
4	An invalid command was entered.

Table 3.7: Force Disconnect Confirmation Codes

Code	Definition
0	The command was valid. The connection to the target device was terminated.
1	Invalid syntax. The command was not entered correctly.
4	An invalid command was entered.

Forcing a connection using SNMP

To force a connection using SNMP, the access rights that apply to SNMP control are assigned to a user named "snmpUser." After adding and setting access rights for the snmpUser, you can force a switch to any of the target devices to which the snmpUser has access.

For instructions on adding an SNMP user, see the AMWorks software online help program. For more information on forcing an external switch on the AMX switch, refer to the specific MIB file called AMX-MIB. This MIB file is available on the AMWorks software CD. You can also download the AMX-MIB file by visiting www.avocent.com/support and clicking *Product Upgrades*.

CHAPTER 4

Terminal Operations

Accessing the Terminal Menu

You can configure an AMX switch at the unit level through the Terminal port. All terminal commands are accessed through a terminal or PC running terminal emulation software.

To access the Terminal Applications menu:

Connect a terminal or PC running terminal emulation software (such as HyperTerminal) to the configuration port on the AMX switch using the supplied null modem cable. The terminal should be set to:

- 9600 baud
- 8 bits
- 1 stop bit
- no parity
- no flow control

The terminal may be connected at any time, even when the unit is powered.

The first time you access the switch, you are prompted to enter a username. Enter the username **admin** and press **Enter**. Once you have access to the AMX switch terminal applications menu, you can configure a password for the serial port should you wish to do so.

Terminal Applications menu commands

The AMX switch Terminal Applications menu features five selections: Network Configuration, System Management, Set/Change Password, SNMP Configuration and Exit.

Network Configuration

The AMX switch is configured for network access through this option. Selecting this option provides you access to the addressing that positions the AMX switch in your network.

NOTE: Both the AMWorks software and the AMX switch must be on the same subnet in class A, B or C to function properly.

System Management

The AMX switch uses IP to communicate with the AMWorks software and synchronize all AMX switch databases. You can provide a unique ID for each AMX switching system configuration so that multiple configurations can be connected to and managed on the same subnet.

All AMX switches that are part of the same AMX configuration should have the same configuration ID.

Set the IDs of all AMX switching system configurations that will be connected to the same subnet as shown in the following table. Continue this numbering system for all other AMX switching system configurations connected to the same subnet.

Table 4.1: AMX Switching System Configuration ID

System	Configuration ID
system 1	000001
system 2	000002
system 3	000003

Set/Change Password

You can set the AMX switch to a secure mode so that the Terminal Applications menu cannot be accessed without first entering a password.

To activate security:

1. Select the *Set/Change Password* menu option. You will be prompted to decide if you wish to continue. Enter a **Y**.
2. Type a password for this AMX switch and press **Enter**. This password can be up to eight characters long.
3. You will be prompted to re-type the password. After completing this step, security will be active and you will not be able to access AMX switch terminal operations without the password.

To change the password:

Select the *Set/Change Password* menu option. You will be prompted to type the old password and a new one. Re-enter the new password to verify.

CAUTION: This password places your AMX switch terminal in a secure mode. This password should be guarded like any network password and care should be taken to avoid forgetting or misplacing it. This password cannot be reset or recovered if lost or forgotten. Should you lose your password, please contact Avocent Technical Support for assistance.

SNMP Configuration

The SNMP Configuration option on the Terminal Applications menu enables you to specify the following parameters for SNMP processing:

- Enabling and disabling SNMP
- Defining read, write and trap community names
- Defining and deleting up to four trap destination IP addresses
- Enabling and disabling SNMP traps

NOTE: "Trap" refers to a trap command used by manual devices to report events to the Network Management System (NMS).

To configure SNMP processing:

1. On the Serial Console Main Menu, press **4** to select SNMP Configuration. The SNMP Configuration Menu displays.
2. Press **1** and **Enter** to toggle the SNMP mode from Disabled to Enabled.
3. Press **2** and **Enter** to specify the community to which traps will be read. Enter the community name and **Enter**.
4. Press **3** and **Enter** to specify the community name to which traps will be written. Enter the community name and press **Enter**.
5. Press **4** and **Enter** to specify the trap community name. Enter the trap community name and press **Enter**.

NOTE: The read, write and trap community names must match those used by the SNMP Browser/Trap Logger.

6. Press **5**, **6**, **7**, **8** and **Enter** to specify each trap IP address of up to four trap hosts to which you want to send SNMP traps. Type each trap IP address and press **Enter**.

NOTE: The trap destination address must take the format of a decimal IP address as follows: xxx.xxx.xxx.xxx

7. Press **9** and **Enter** to display the SNMP Trap Configuration Menu. Press the number of each SNMP trap you wish to enable or disable and **Enter**.
8. Press **0** and **Enter** to apply and store all changes.

   - or -

   Press **x** and **Enter** to restore settings as they were before changes were made.

See *Users* on page 37 and *Forcing a connection using SNMP* on page 62 for information on adding an SNMP user and assigning rights to the SNMP user.

Managing AMX switch objects with SNMP

Using SNMP, you can monitor and manage MIB (Management Information Base) objects specific to the AMX switch. Refer to Table 4.2 for a description of the AMX system MIB object groups.

Table 4.2: AMX System MIB Object Groups

Object Group	Purpose
amxAppliance	Provides general information about the AMX switch, including firmware and hardware revisions
amxAmiq	Provides a list of available IQ modules from the AMX switch
amxUserStation	Provides a list of user stations connected to the AMX switch
amxStats	Provides statistics on packets for each port (only available internally)
amxSnmp	Provides information on SNMP settings

Load the AMX-MIB file into your SNMP browser to start monitoring and managing AMX switch-specific objects. Once you have enabled the sending of traps on the AMX switch, these traps can be interpreted by the SNMP trap listener by using the trap-specific MIB files. The following table describes the MIB files required for the SNMP processing.

Table 4.3: AMX System MIB Trap Files

Trap File	Purpose
AMX-MIB	Used by the SNMP Browser/Manager to monitor/manage the AMX switch
AMX5000-TRAP-MIB	SNMP traps for the AMX5000 switch
AMX5010-TRAP-MIB	SNMP traps for the AMX5010 switch
AMX5020-TRAP-MIB	SNMP traps for the AMX5020 switch
AMX5030-TRAP-MIB	SNMP traps for the AMX5030 switch

Exit

This menu selection will return you to the ready prompt.

APPENDICES

Appendix A: Technical Specifications

Table A.1: AMX5000 Switch Specifications

Server Ports	
Number	32
Connectors	RJ-45 AMX switch interconnect
User Ports	8
Number	1
Connectors	RJ-45 AMX switch interconnect
Network Connection	
Number	1
Type	Ethernet, 10BaseT, 100BaseT
Connector	RJ-45
Terminal Port	
Number	1
Type	RS-232 serial
Connector	DB9 male
Mechanical	
H x W x D	44.5 x 432 x 287 mm 1 U form factor (1.8 x 17 x 11.3 in)
Weight	3.7 kg (8 lb)
Environmental	
Heat Dissipation	270 kJ
Power Consumption	75 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 50° Celsius (32° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.2: AMX5010 Switch Specifications

Server Ports	
Number	64
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	16
Connectors	RJ-45 AMX switch interconnect
Network Connection	
Number	1
Type	Ethernet, 10BaseT, 100BaseT
Connector	RJ-45
Terminal Port	
Number	1
Type	RS-232 serial
Connector	DB9 male
Mechanical	
H x W x D	89 x 432 x 287 mm 2 U form factor (3.5 x 17 x 11.3 in)
Weight	7.3 kg (16 lb)
Environmental	
Heat Dissipation	610 kJ
Power Consumption	75 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 50° Celsius (32° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.3: AMX5020 Switch Specifications

Server Ports	
Number	42
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	4
Connectors	RJ-45 AMX switch interconnect
Network Connection	
Number	1
Type	Ethernet, 10BaseT, 100BaseT
Connector	RJ-45
Terminal Port	
Number	1
Type	RS-232 serial
Connector	DB9 male
Mechanical	
H x W x D	43 x 432 x 351 mm 1 U form factor (1.7 x 17 x 13.8 in)
Weight	3.7 kg (8 lb)
Environmental	
Heat Dissipation	270 kJ
Power Consumption	75 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 50° Celsius (32° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.4: AMX5030 Switch Specifications

Server Ports	
Number	16
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	4
Connectors	RJ-45 AMX switch interconnect
Network Connection	
Number	1
Type	Ethernet, 10BaseT, 100BaseT
Connector	RJ-45
Terminal Port	
Number	1
Type	RS-232 serial
Connector	DB9 male
Mechanical	
H x W x D	43 x 432 x 351 mm 1 U form factor (1.7 x 17 x 13.8 in)
Weight	3.7 kg (8 lb)
Environmental	
Heat Dissipation	270 kJ
Power Consumption	75 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 50° Celsius (32° to 122° Fahrenheit) operating -20° to 50° Celsius (-4° to 122° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.5: AMX5100, AMX5110 or AMX5120 User Station Specifications

Server Ports	
Number	AMX5100 user station: 1; AMX5110 and AMX5120 user station: 2
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	PS/2: 2; Sun: 1, VGA video: 1; Serial: 1
Type	PS/2, Sun and VGA video
Connectors	PS/2: 6-pin miniDIN, PS/2 keyboard and mouse; Sun: 8-pin miniDIN keyboard and mouse; VGA video:15HDD female; Serial: DB9 male
Mechanical	
H x W x D	44.5 x 279 x 292 mm 1U form factor (1.8 x 11 x 11.5 in)
Weight	2 kg (4.41 lb)
Environmental	
Heat Dissipation	90 kJ
Power Consumption	25 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 50° Celsius (32° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Supported Hardware	
Peripherals	PS/2 keyboard and mouse, Sun keyboard and mouse
Video Resolution	1024 x 768 (1280 x 1024 AMX5120 only) with 1000 feet of UTP from target device to user; 1280 x 1024 with 500 feet of UTP from target device to user; 1600 x 1200 with 100 feet of UTP from target device to user
Sync Types	Separate horizontal and vertical; sync on green (as used on SGI and HP9000)
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.6: AMX5130 User Station Specifications

Server Ports	
Number	2
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	PS/2: 2; VGA video: 1; USB: 2; Audio: 2, Serial: 1
Type	PS/2, VGA video, USB, Audio and Serial
Connectors	PS/2: 6-pin miniDIN, PS/2 keyboard and mouse; VGA video:15HDD female; USB: Type A; Audio: 3.5 mm; Serial: DB9 male
Audio (Bandwidth)	7.5 KHz
Serial (Baud Rate)	38.4 KBaud
Mechanical	
H x W x D	44.5 x 279 x 292 mm 1U form factor (1.8 x 11 x 11.5 in)
Weight	2 kg (4.41 lb)
Environmental	
Heat Dissipation	90 kJ
Power Consumption	25 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 40° Celsius (32° to 104° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Supported Hardware	
Peripherals	PS/2 keyboard and mouse, USB keyboard and mouse, speakers, microphone, serial devices (max baud rate of 38,400 baud)
Video Resolution	1280 x 1024 with 1000 feet of UTP from target device to user; 1600 x 1200 with 100 feet of UTP from target device to user
Sync Types	Separate horizontal and vertical; sync on green (as used on SGI and HP9000)
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.7: AMX5111 and AMX5121 User Station Specifications

Server Ports	
Number	2
Connectors	RJ-45 AMX switch interconnect
User Ports	
Number	PS/2: 2; VGA video: 1; USB: 2; Serial: 1
Type	PS/2, VGA video, USB, and Serial
Connectors	PS/2: 6-pin miniDIN, PS/2 keyboard and mouse; VGA video:15HDD female; USB: Type A; Serial: DB9 male
Mechanical	
H x W x D	44.5 x 279 x 292 mm 1U form factor (1.8 x 11 x 11.5 in)
Weight	2 kg (4.41 lb)
Environmental	
Heat Dissipation	90 kJ
Power Consumption	25 W maximum
AC Power	100 to 240 VAC, 50/60 Hz
Temperature	0° to 40° Celsius (32° to 104° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 90% noncondensing operating
Supported Hardware	
Peripherals	PS/2 keyboard and mouse, USB keyboard and mouse
Video Resolution	1024 x 768 (AMX5111 user station) or 1280x1024 (AMX5121 user station) with 1000 feet of UTP from target device to user, 1600 x 1200 with 100 feet of UTP cable from target device to user
Sync Types	Separate horizontal and vertical; sync on green (as used on SGI and HP9000)
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.8: AMIQ Module Specifications

Server Ports	
Number	1
Type	AMIQ-PS2 module, AMIQ-USB module, AMIQ-VSN module
Connector	• AMIQ-PS2 module: 6-pin miniDIN, PS/2 keyboard and mouse; 15HDD male, VGA video; 2 RJ-45 AMX switch interconnect • AMIQ-VSN module: 8-pin miniDIN, Sun keyboard and mouse; 13W3 male, VGA video • AMIQ-WSN module: 8-pin miniDIN, Sun keyboard and mouse; 13W3 male, VGA video • AMIQ-USB module: USB keyboard and mouse (supports Intel, Sun, Macintosh), 15HDD male, VGA video
Sync Types	Separate horizontal and vertical; sync on green; composite sync
Plug and Play	DDC2B
User Ports	
Number	1
Connectors	RJ-45 AMX switch interconnect
Audio (Bandwidth)	7.5K Hz
Serial (Baud Rate)	38.4 KBaud
Mechanical	
H x W x D	20 x 39 x 460 mm (0.8 x 1.5 x 18.1 in)
Weight	0.13 kg (0.29 lb)
Environmental	
Power Consumption	650 mW
DC-input voltage	5 VDC
Temperature	10° to 50° Celsius (50° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 95% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.9: AMIQDM Module Specifications

Server Ports	
Number	1
Type	AMIQDM-PS2 module, AMIQDM-USB module, AMIQDM-VSN module
Connector	• AMIQDM-PS2 module: 6-pin miniDIN, PS/2 keyboard and mouse; 15HDD male, VGA video; 2 RJ-45 AMX switch interconnect; 2 audio; serial port • AMIQDM-USB module: USB keyboard and mouse (supports Intel, Sun, Macintosh), 15HDD male, VGA video; 2 audio; serial port • AMIQDM-VSN module: 8-pin miniDIN, Sun keyboard and mouse; 13W3 male, VGA video; 2 RJ-45 AMX switch interconnect; 2 audio; serial port
Sync Types	Separate horizontal and vertical; sync on green; composite sync
Plug and Play	DDC2B
User Ports	
Number	2
Connectors	RJ-45 AMX switch interconnect
Audio (Bandwidth)	7.5 KHz
Serial (Baud Rate)	38.4 KBaud
Mechanical	
H x W x D	20 x 39 x 78 mm (0.8 x 1.5 x 3.1 in)
Weight	0.13 kg (0.29 lb)
Environmental	
Power Consumption	1W
DC-input voltage	5 VDC
Temperature	0° to 40° Celsius (32° to 104° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 95% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Table A.10: AMIQ-SRL Module Specifications

Server Ports	
Number	1
Type	DCE
Connector	9-pin D-sub female
User Ports	
Number	1
Connectors	RJ-45 AMX switch interconnect
Serial Ports	
Type	DCE
Emulation	VT100
Baud Rate	115200, 57600, 38400, 19200, 9600, 2400, 1200, 300 bits per second
Parity	Even, Odd, None
Flow Control	None, CTS/RTS or XOn/XOff
Mechanical	
H x W x D	20 x 39 x 78 mm (0.8 x 1.5 x 3.1 in) with serial connector
Weight	0.13 kg (0.29 lb)
Environmental	
AC-input current rating	230 mA
DC-input voltage	5 VDC
Temperature	10° to 50° Celsius (50° to 122° Fahrenheit) operating -20° to 60° Celsius (-4° to 140° Fahrenheit) nonoperating
Humidity	10 to 95% noncondensing operating
Safety and EMC Approvals and Markings	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC 47CFR Part 15 Class A, CSA C22.2 No. 60950, IEC 60950, FCC Class A, UL 60950 3rd Edition, VCCI Class A

Appendix B: Using AMIQ-SRL Modules

The AMIQ-SRL module is a serial-to-VGA converter which permits VT100-capable devices to be viewed from the AMX51xx user station. The actual serial data is not accessed, but is merely displayed. All serial data coming from the target device is displayed in a VT100 window, placed into a video buffer and sent to the AMX51xx user station as though it came from a VGA target device. Likewise, keystrokes entered on a keyboard are sent to the attached device as though they were typed on a VT100 terminal.

AMIQ-SRL module modes

The following modes can be accessed from the AMIQ-SRL module:

- On-Line: This mode enables you to send and receive serial data.
- History: This mode enables you to review serial data.
- Configuration: This mode enables you to specify communication parameters, the appearance of the serial data, key combinations for specific actions and macros.

Configuring the AMIQ-SRL module

NOTE: The AMIQ-SRL module is a DCE device and only supports VT100 terminal emulation.

Pressing **Ctrl-F8** will activate the Configuration Screen, which contains menu items that allow you to configure your AMIQ-SRL module.

NOTE: When the Configuration Screen is active, pressing **Enter** saves changes and returns you to the previous screen. Pressing **Esc** returns you to the previous screen without saving changes.

Within the Configuration Screen, you can modify the following options:

- Baud Rate: This option allows you to specify the serial port communications speed in bauds per second (BPS). Available options are 300, 1200, 2400, 9600, 19200, 34800, 57600 or 115200. The default value is 9600.
- Parity: This option allows you to specify the serial port communications parity. Available options are EVEN, ODD or NONE. The default value is NONE.
- Flow Control: This option allows you to specify the type of serial flow control. Available options are NONE, XOn/XOff (software) and RTS/CTS (hardware). The default value is NONE. If you select a Baud Rate of 115200, the only available Flow Control is RTS/CTS (hardware).
- DSR/CD Mode: This option allows you to control the Data Set Ready/Carrier Detect line on your serial interface. Available options are Always on and Toggle. The default value is Always on.
- Enter Sends: This option enables you to specify the keys that are transmitted when **Enter** is pressed. Available options are <CR> (Enter) or <CR><LF> (Enter - Linefeed).
- Received: This option enables you to specify how the module translates a received **Enter** character. Available options are <CR> (Enter) or <CR><LF> (Enter - Linefeed).

- Background: This option changes the screen's background color. The currently-selected color displays in the option line as it is changed. Available colors are Black, Grey, Light Grey, White, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange Red, Maroon and Brown. The default color is Black. This value cannot be identical to the Normal Text or Bold Text value.
- Normal Text: This option changes the screen's normal text color. The currently-selected color displays in the option line as it is changed. Available colors are Black, Grey, Light Grey, White, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange Red, Maroon and Brown. The default color is Grey. This value cannot be identical to the Bold Text or Background value.
- Bold Text: This option changes the screen's bold text color. The currently-selected color displays in the option line as it is changed. Available colors are Black, Grey, Light Grey, White, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange Red, Maroon and Brown. The default color is White. This value cannot be identical to the Normal Text or Background value.
- Screen Size: This option allows you to specify the screen's text width size. Available values are widths of 80 columns or 132 columns. The length for both widths is 26 lines.

The following Configuration Screen options enable you to define the function keys that will perform a selected action. To specify a new function key, press and hold the **Ctrl** key, then press the function key that you want to associate with the action. For example, if you want to change the Configuration (Config) Key Sequences option from <CTRL-F8> to <CTRL-F7>, press and hold the **Ctrl** key and then press **F7**.

- Config Key Sequences: This option allows you to define the key combination that causes the Configuration Screen to appear.
- On-Line Key Sequence: This option allows you to define the key sequence that displays the On-Line mode. The default key sequence is **Ctrl-F10**.
- Help Key Sequence: This option allows you to define the key combination that displays the Help System screen. The default key sequence is **Ctrl-F1**.
- History Key Sequence: This option allows you to define the key combination that enables History mode. The default key sequence is **Ctrl-F9**.
- Clear History Key Sequence: This option allows you to define the key combination that clears the history buffer while in History mode. The default key sequence is **Ctrl-F11**.
- Break Key Sequence: This option allows you to configure the key combination that generates a break condition. The default key sequence is **Alt-B**.

To configure an AMIQ-SRL module:

1. Press **Ctrl-F8**. The Configuration Screen will appear.
2. Select a parameter to change. You can navigate the Configuration Screen using the **Up Arrow** and **Down Arrow** keys.
3. Modify the selected value using the **Left Arrow** and **Right Arrow** keys.

4. Repeat steps 2 and 3 to modify additional values.
5. Press **Enter** to save your changes and exit the Configuration Screen.

   - or -

   Press **Esc** to exit the Configuration Screen without saving the changes.

Creating an AMIQ-SRL module macro

Pressing the Page Down key when the Configuration Screen is displayed will provide access to the Macro Configuration screen. The AMIQ-SRL module can be configured with up to 10 macros. Each macro can be up to 128 characters in length.

To create a macro:

1. Select the AMIQ-SRL module you wish to configure and press **Ctrl-F8** to activate the Configuration Screen.
2. When the Configuration Screen appears, press **Page Down** to view the Macro Configuration screen. The Macro Configuration screen shows the 10 available macros and the associated key sequences, if any, for each.
3. Using the **Up Arrow** and **Down Arrow** keys, scroll to an available macro number and highlight the listed keystroke sequence. Type the new macro keystroke sequence over the default. Any combination of **Ctrl** or **Alt** and a single key may be used. When you have finished entering the keystroke sequence that will activate the new macro, press the **Down Arrow** key.
4. On the line below the macro keystroke sequence you just entered, type the keystroke sequence that you wish the macro to perform.
5. Repeat steps 3 and 4 to configure additional macros.
6. When finished, press **Enter** to save your changes and exit the Macro Configuration screen.

   - or -

   Press **Esc** to exit the Macro Configuration screen without saving the changes.

Using History mode

History mode allows you to examine the contents of the history buffer, which contains the events that have occurred.

The AMIQ-SRL module maintains a buffer containing 240 lines minimum, or 10 screens, of output. When the history buffer is full, it will add new lines at the bottom of the buffer and delete the oldest lines at the top of the buffer.

NOTE: The Config Key Sequence, On-Line Key Sequence and Clear History Key Sequence used in the following procedure are the default values. These key combinations can be changed using the Configuration Screen.

To use History mode:

1. Press **Ctrl-F9**. The mode will display as History.

2. Press each key to perform the action described in the following table.

Table B.1: History Mode Control Keys

History Mode	Action
Home	Move to the top of the buffer.
End	Move to the bottom of the buffer.
Page Up	Move up one buffer page.
Page Down	Move down one buffer page.
Up Arrow	Move up one buffer line.
Down Arrow	Move down one buffer line.
CTRL-F	Enters Configuration mode. The Configuration Screen will display. Press **Ctrl-F9** to return to the previous screen with History mode enabled or **Ctrl-F10** to return to the previous screen with On-Line mode enabled.
CTRL-F11	Clears the history buffer. If you choose this option, a warning screen will appear. Press **Enter** to delete the history buffer or **Esc** to cancel the action. The previous screen will redisplay.

3. When finished, press **Ctrl-F10** to exit History mode and return to On-Line mode.

AMIQ-SRL module pinouts

The AMIQ-SRL module pinouts are provided in the following table.

Table B.2: AMIQ-SRL Module Pinouts

DB9-F	Host Signal Name/Description	Signal Flow	SRL Signal Name/Description
1	DCD- Data Carrier Detect	Out of SRL	DTR - Data Terminal Ready
2	RXD - Receive Data	Out of SRL	TXD - Transmit Data
3	TXD - Transmit Data	In to SRL	RXD - Receive Data
4	DTR - Data Terminal Ready	In to SRL	DSR - Data Set Ready
5	GND - Signal Ground	N/A	GND - Signal Ground
6	DSR - Data Set Ready	Out of SRL	DTR - Data Terminal Ready
7	RTS - Request to Send	In to SRL	CTS - Clear to Send
DB9-F	**Host Signal Name/Description**	**Signal Flow**	**SRL Signal Name/Description**

Table B.2: AMIQ-SRL Module Pinouts (Continued)

8	CTS - Clear to Send	Out of SRL	RTS - Request to Send
9	N/C - Not Connected	N/A	N/C - Not Connected

Language support

The AMIQ-SRL module is designed to operate correctly with all of the keyboard layouts that are selectable on the AMX51xx user station. Once a keyboard layout in the OSCAR interface is selected, the AMIQ-SRL module ensures that the correct character for the key pressed is passed to the serial device. This is done automatically and does not require any intervention from the user.

Appendix C: OSCAR Interface Edit Device Screen Settings

Table C.1: AutoView KVM Switch

Edit Device Screen Settings	
Target	AutoView switch
Ports	4, 8
Hotkey	NumLock + “-”, NumLock + “+”, Ctrl + “~”

Table C.2: AutoView 200, 400, 416 or 424 Switch

Edit Device Screen Settings	
Target	AutoView switch
Ports	AutoView 200, 400 switches: 4,8; AutoView 416 switch: 16 AutoView 424 switch: 24
Hotkeys	NumLock + “-”, NumLock + “+”, Ctrl + “~”

Table C.3: SwitchView OSD Switch

Edit Device Screen Settings	
Target	SwitchView OSD switch
Ports	8
Hotkeys	NumLock + “-”, NumLock + “+”, Ctrl + “~””

Table C.4: AV2000R, AV1000R, AV2000 or DSR Switch

Edit Device Screen Settings	
Target	AV2000R, AV1000R, AV2000 or DSR switch
Ports	AV2000R, AV1000R, AV2000 switches:16 DSR switches: 8, 16
Hotkeys	The **Print Screen** key is not operational for a target device connection
Unit Settings	Required: Setting the display order of the target device list to “Port” Recommended: Setting the OSD screen display time to 2 seconds

Table C.5: OutLook ES Switch

Edit Device Screen Settings	
Target	OutLook ES switch
Ports	8, 16
Hotkeys	The **Print Screen** key is not operational for a target device connection
Unit Settings	Required: Setting the display order of the target device list to “Port” Recommended: Setting the OSD screen display time to 2 seconds

Table C.6: XP Switch

Edit Device Screen Settings	
Target	XP switch
Ports	1, 2, 4, 8, 12
Hotkeys	NumLock + “-”, NumLock + “*”, NumLock + “/”, NumLock + “+”, Ctrl+ “~”

Table C.7: IBM C2T

Edit Device Screen Settings	
Target	IBM C2T
Ports	up to 32
Hotkey	NumLock–NumLock

Table C.8: KVM Switch

Edit Device Screen Settings	
Target	KVM switch
Ports	1, 2, 4, 8, 12, 16, 20, 24, 28, 32
Hotkeys	Ctrl–Ctrl (L), Ctrl–Ctrl (R), Ctrl–Ctrl (L-R) Alt–Alt (L), Alt–Alt (R), Alt–Alt (L-R) Shift–Shift (L), Shift–Shift (R), Shift–Shift (L-R) Print Screen Scroll, Scroll–Scroll NumLock–NumLock NumLock + “-”, NumLock + “*”, NumLock + “/”, NumLock + “+”, Ctrl + “~”

Appendix D: Troubleshooting

One or two colors are missing on a server or a user station

- Check the VGA connection between the user station and the monitor.
- Check the VGA connection between the IQ module and the server.
- Connect the monitor directly to a server to determine if the video card is causing the fault.
- If the video quality is poor on all servers from one user station, replace the UTP cable connecting the user station and the switch.
- Swap ports on the switch to determine if there is a port failure.
- To determine if there is hardware failure, complete one of the following steps: 1) If the colors are missing on a server, swap the IQ module; or 2) If the colors are missing on a user station, swap the user station.

Video does not display after connection is made to a server

- Make sure that the monitor is compatible with resolution settings on the server.
- The server may be in sleep mode. Use the keyboard or mouse to restore normal operating mode.

Video quality is poor; colors are missing or too bright

- Make sure the monitor is connected to the user station using a UTP cable and that the VGA connector is inserted correctly. Other cables, such as STP cables, may cause poor video quality when used at distances over 400 feet.
- If poor video quality is random, test the cables between tiers of AMX switches.

Switches cannot be made; “Connection timeout” error message displays

- If any of the green LEDs on the front of the AMX switch are flashing, make sure the IQ modules are connected to the server ports and that the user stations are connected to the user ports. See Figure 2.4 on page 11 for more information about the location of each ports.
- Make sure that cables between cascaded AMX switches are connected to the correct ports. In a cascaded switching system, UTP cable is connected from the server ports on the primary switch to the user ports on the secondary switches. This process may be repeated to add a tertiary level of switches. Make sure that no switch has a user port connected back into one of it's own server ports. See *Installing a Cascaded AMX Switching System* on page 17 for more information.
- If any of the green LEDs are still flashing, use the AMWorks software to Flash upgrade the corresponding IQ module. See the AMWorks software online help for more information.
- If the Connection timeout error message still displays, power cycle the AMX switch and start again.

The console port on the AMX switch has locked up

- Check the terminal emulation software settings to ensure accuracy.
- Restart terminal emulation software and start again.
- Power cycle the AMX switch and start again.

The OSCAR interface does not display unless a switch is made

- Ensure that the monitor supports the 640 x 480 default resolution of the OSCAR interface. If this resolution is not supported, access the command line and type **set def res 1** to change the default resolution to 1024 x 768.

Appendix E: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you encounter with your Avocent product. If an issue should develop, follow the steps below for the fastest possible service.

To resolve an issue:

1. Check the pertinent section of this manual to see if the issue can be resolved by following the procedures outlined.
2. Check our web site at www.avocent.com/support to search the knowledge base or use the online service request.
3. Call the Avocent Technical Support location nearest you.

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