Avocent®

Emerge® Digital Extender System

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.

European Union

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

Canadian Notification

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

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

Safety and EMC Approvals and Markings

USA (UL, FCC), Canada (cUL), Germany (TUV), European Union (CE), Japan (VCCI), Russia (GOST) and Korean (MIC)

Emerge® Digital Extender System

Installer/User Guide

Instructions

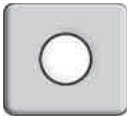
This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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

Introduction

The Emerge digital extender system, which includes a transmitter and a user station, provides users with a full workstation desktop experience from anywhere on the corporate TCP/IP network, while maintaining the workstations securely housed in a corporate data center. Desktop users can access keyboard, mouse, video, audio and USB mass storage devices from remote workstations via the Emerge digital extender system.

NOTE: References to the Emerge digital extender system in this document refer to both the receiver (ECMS2000 or ECMS4000 user stations) and the transmitter. The ECMS2000 transmitter accompanies the ECMS2000 user station, while the ECMS4000 transmitter accompanies the ECMS4000 user station.

Emerge digital extender system features

Security

The Emerge digital extender system supports Secure Sockets Layer (SSL) over a TCP/IP connection. All media streams transmitted between the ECMS user station and the transmitter are encrypted. Password protection is also provided to control access to all administration functions, such as network configuration.

Support for keyboards and mice

All standard USB and PS/2 keyboards (up to 109 keys) and mice (up to 5 buttons) are supported by the Emerge digital extender system. The Emerge digital extender system also allows for mix and match of USB and PS/2 peripherals. For example, it is possible to use a USB keyboard in conjunction with a PS/2 mouse. The default keyboard and mouse drivers of the remote workstation are fully supported. This enables the Emerge digital extender system to support 2, 3 and 5-button mice with scroll and tilt-wheel capability. Composite mouse and keyboard devices are also supported.

Flash upgradable

Upgrade your firmware at any time using the XMODEM or HTTP protocols to ensure that your Emerge digital extender system is always running the most current version available. Both the transmitter and the ECMS user station are Flash upgradable. Upgrades can also be carried out via

the DM2000 Manager appliance. See the Emerge® DM2000 Manager Installer/User Guide for more information.

Ethernet addressing

The ECMS user station and the transmitter are IP-addressable devices, giving you the flexibility to locate back-racked workstations anywhere within your enterprise and at any distance from your desktop users. The ECMS user station and the transmitter use standard network protocols to transfer data between the remote workstation and the peripheral devices located at the user's desk. The ECMS user station can operate on a network connection of 100 Mbps or 1 Gbps. For optimum performance, a 1 Gbps connection is recommended.

USB support

The ECMS user station is compatible with the USB 2.0 standard and provides four USB 2.0 compliant ports that can be used to access USB keyboards and mice. Hot-plugging of USB devices is supported.

NOTE: A hub cannot be used to expand the number of USB ports available.

The ECMS2000 transmitter provides two USB interfaces:

- One is a low/full speed port that is used for all keyboard and mouse peripheral devices interfacing with the target workstation, along with providing power for the ECMS2000 transmitter.

NOTE: The cable labled 2 is low speed, while the cable labled 1 is high speed.

- The other is a high-speed port that is used for virtual media (mass storage devices) peripheral devices interfacing with the target workstation, along with proving power for the ECMS2000 transmitter (power supply option available only with the ECMS2000 transmitter).

NOTE: The ECMS4000 transmitter provides a single USB interface, and uses an integrated hub within the transmitter.

Video

Video of 24-bit color depth up to a resolution of 1280 x 1024 at 60 Hz is supported by the ECMS2000 user station and ECMS2000 transmitter. Both CRT and flat-panel LCD monitors are supported, and can be connected to the Emerge digital extender system via a DVI-I video connector. VGA monitors can be attached to the system by using a DVI to VGA adaptor. The system supports DDC version 2B.

The ECMS4000 user station and ECMS4000 transmitter support 24-bit color depth up to a resolution of 1920 x 1200 at 60 Hz. DVI-D PC video sources are supported at the transmitter. Since DVI-I is supported at the receiver, a VGA adaptor can be used to connect to a VGA monitor.

Transmitter features

The transmitter connects externally to the video, audio and USB ports of the remote workstation.

The ECMS2000 transmitter is attached directly to the remote workstation and draws its power directly from two USB ports on the remote workstation. The ECMS4000 transmitter is powered by an external power supply.

NOTE: If the remote workstation cannot supply the required power to the ECMS2000 transmitter or if two USB connections are not available, an external power supply can be obtained from Avocent.

The transmitter captures, compresses and encrypts the workstation's media streams and transmits them to the receiver over a standard TCP/IP network.

Multiplatform support

The transmitter is connected to the remote workstation via USB connectors. This enables the ECMS user station to interoperate seamlessly with PC, Sun® and Macintosh® target workstations. PC, Sun and Macintosh USB keyboards can be connected to the ECMS user station. PS/2 keyboards and mice can also be used.

Screen aspect ratio

The transmitter can be configured through the serial console to allow either normal aspect resolutions or wide screen resolutions as the preferred setting on its EDID table.

User station features

The ECMS user station enables the desktop user's keyboard, mouse, video, audio and mass storage devices to connect to the target workstation via a network connection to the transmitter that is directly connected to the target workstation.

Multiplatform support

You can attach the ECMS user station to workstations running the following operating systems:

- Microsoft® Windows®
- Linux®
- Solaris™
- Microsoft Windows Vista®
- Mac OS®

The default keyboard drivers for these operating systems are supported by the ECMS user station.

Flexible installation

The ECMS user station provides you with the following flexible installation features:

- The ECMS user station can be desk mounted or mounted on the back of a monitor
- Installation requires no new drivers or software

- Standard UTP cabling makes installation simple and keeps costs low

On-Screen Display (OSD)

The ECMS user station includes an OSD that allows you to view information about the configuration of your system.

Operations administration and maintenance

The ECMS user station incorporates a serial menu that allows you to perform administration and maintenance tasks for both the ECMS user station and the transmitter. Examples of tasks you can perform include configuration of network settings and firmware Flash upgrades.

Virtual media

Mass storage devices, such as removable drives and external CD-ROM drives, can be attached to the ECMS user station and will function as if they are directly connected to the remote workstation. Data can be both read from and written to these mass storage devices. You can connect both a removable drive and an external drive to an ECMS user station.

The transfer speed between the mass storage device and the remote workstation is dependant on the Ethernet network. A 1 Gbps connection is required for high-performance virtual media transfer. The system is capable, however, of operating over a 100 Mbps Ethernet connection.

The following mass storage devices are supported:

- Removable drives
- External USB hard drives
- External USB CD-ROM drives
- External USB DVD-ROM drives
- USB memory sticks

Hot-plugging of USB mass storage devices is supported.

NOTE: The system supports the default drivers for mass storage devices.

Audio

The ECMS2000 user station supports CD-quality stereo from the remote workstation to peripheral speakers, and mono-quality audio from a peripheral microphone to the remote workstation. The ECMS4000 user station supports a CD-quality stereo from the remote workstation to peripheral speakers.

Bandwidth usage (ECMS2000 user station only)

It is possible to restrict the aggregate bandwidth used on the Ethernet link from the serial console. The bandwidth options are:

- Unlimited

- 100 MBits/s
- 50 MBits/s
- 20 MBits/s
- 10 MBits/s

User station modes

The Emerge Digital Extender System can operate in Extender Mode, Desktop Mode or Matrix Mode. The ECMS user station interfaces to a DHCP server. The user station and transmitter can obtain their IP address data from a DHCP server in any of the three modes.

Extender Mode

In Extender Mode, when the ECMS user station is turned on, a connection is automatically established with the remote workstation via the transmitter.

Desktop Mode

In Desktop Mode, when the ECMS user station is turned on, the OSD enables the user to log in. Once logged in, users will automatically be connected to their allocated computer.

Matrix Mode

In Matrix Mode, when the ECMS user station is turned on, the OSD enables the user to log in. Once logged in, the OSD displays all computers a user can access.

NOTE: A DM2000 Manager appliance is required to enable both Desktop Mode and Matrix Mode.

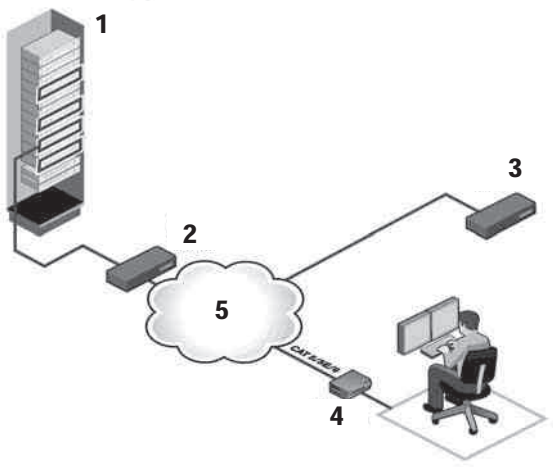

Figure 1.1: Emerge Digital Extender System - Desktop Mode

Table 1.1: Figure 1.1 Descriptions

Number	Description
1	Rack Mounted PC and Transmitter
2	Gigabit Ethernet Switch
3	DM2000 Manager Appliance
4	User Station
5	Ethernet LAN

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 workstation 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 workstation and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the workstation and monitor. When using a backup Uninterruptible Power Supply (UPS), power the workstation and the transmitter off the same supply.

NOTE: The AC inlet is the main disconnect.

CHAPTER 2

Installation

Installing the ECMS2000 user station

Before installing your ECMS2000 user station, refer to the list below to ensure that you have all the items necessary for installation.

NOTE: For installation of the DM2000 Manager appliance, see the Emerge® DM2000 Manager Installer/User Guide.

Needed to install the ECMS2000 user station

- ECMS2000 transmitter (ordered separately)
- External power supply for the ECMS2000 user station
- IEC power cord
- ECMS2000 User Station Quick Installation Guide
- Three-wire serial cable or null modem cable (not supplied)

Needed for non-standard installations

- To connect a VGA monitor to the ECMS2000 user station: a DVI to VGA adaptor (not supplied)
- To connect the ECMS2000 transmitter to a remote workstation that has VGA video output: a VGA to DVI-I adaptor (not supplied)
- To connect the ECMS2000 transmitter to a remote workstation that has DVI-D video output: a DVI-D to DVI-I adaptor (not supplied)
- If the remote workstation is unable to supply sufficient power to support the ECMS2000 transmitter: an optional power supply, available from Avocent

Mounting option

The ECMS2000 user station mounts to the rear of a flat panel monitor via a mounting plate accessory.

NOTE: Mounting accessories are ordered separately. Contact Avocent for more information.

Installation options

CAUTION: To reduce the risk of electric shock or damage to your equipment, disconnect the power from the ECMS2000 user station by unplugging the power supply from the electrical outlet. To reduce the risk of electric shock or damage to your equipment, turn on the remote workstation and the ECMS2000 user station in the order described in the following procedures.

You can install the Emerge digital extender system with the ECMS2000 user station either by a point-to-point or networked configuration.

Point-to-point installation

The following instructions will enable you to install your Emerge digital extender system in a point-to-point configuration. In a point-to-point configuration, no administrator setup of the ECMS2000 transmitter or the ECMS2000 user station is required. This enables you to install the system quickly, directly out-of-the-box. However, in the point-to-point configuration, you can install only one ECMS2000 transmitter and ECMS2000 user station pair on a subnet and you must locate both on the same subnet as well.

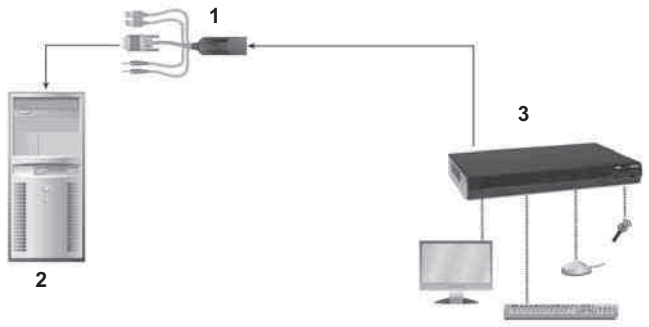

Figure 2.1: Point-to-Point Installation (ECMS2000 User Station)

Table 2.1: Figure 2.1 Descriptions

Number	Description
1	ECMS2000 Transmitter
2	Remote Workstation
3	ECMS2000 User Station

To connect the ECMS2000 transmitter:

Before connecting the ECMS2000 transmitter to the remote workstation, ensure that the resolution and the refresh rate of the remote workstation are supported by the ECMS2000 user station. Set the screen resolution and refresh rate of the remote workstation. Unsupported settings will cause blank video at the user station.

NOTE: Go to www.avocent.com for updated information on supported resolutions and refresh rates.

NOTE: The ECMS2000 transmitter requires two USB ports on the remote workstation to operate correctly. The ECMS2000 transmitter draws electrical power from these USB ports.

1. Turn off the remote workstation.
2. The ECMS2000 transmitter has two USB connectors. Connect each of these connectors to a corresponding USB port on the remote workstation.
3. Connect the video connector on the ECMS2000 transmitter to the appropriately labeled port on the back of the workstation.

NOTE: A VGA-only workstation can be connected to the ECMS2000 transmitter using a VGA to DVI-I adaptor. You must configure the ECMS2000 transmitter video settings for VGA through the serial menu.

4. Connect the ECMS2000 transmitter's audio and microphone connectors to the appropriately labeled ports on the back of the workstation.

NOTE: For CD-quality audio, you must configure the ECMS2000 transmitter and the user station using the serial menu.

5. Connect one end of the UTP cable to the ECMS2000 transmitter's RJ-45 connector and turn on the workstation.
6. Route the other end of the UTP cable to the location you have chosen for the ECMS2000 user station. If necessary, you can extend the UTP cable via junctions or a hub (subject to normal Ethernet cabling practices).

Figure 2.2: ECMS2000 Transmitter

Table 2.2: Figure 2.2 Descriptions

Number	Type of Connector
1	USB
2	Video
3	Mic
4	Line-out

To connect the ECMS2000 user station:

1. Connect your keyboard, monitor, mouse and other peripherals cables to the appropriately labeled ports on the back of the ECMS2000 user station.
2. Connect the UTP cable to the RJ-45 port on the back of the ECMS2000 user station.

3. Turn on the ECMS2000 user station. A connection will be automatically established with the remote workstation.

NOTE: VGA monitors can be connected to the ECMS2000 user station by using a DVI-I to VGA adaptor.

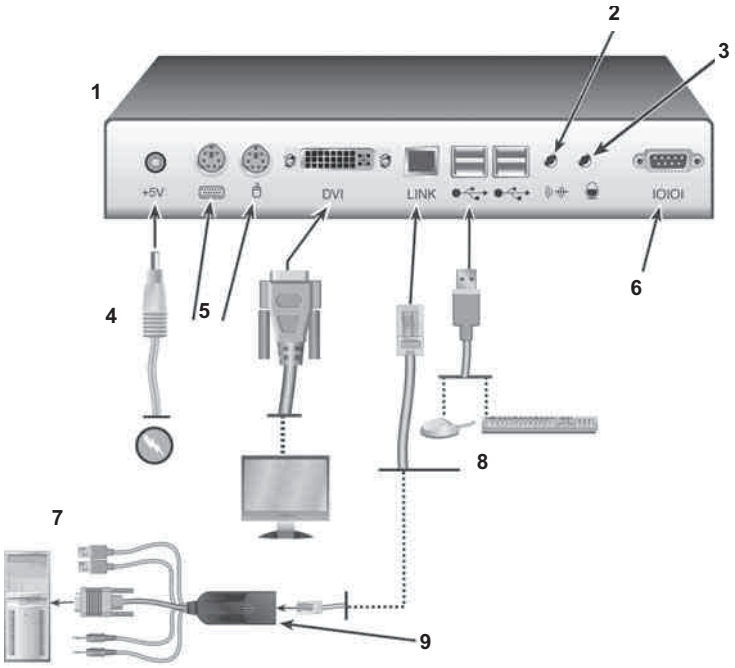

Figure 2.3: ECMS2000 User Station and ECMS2000 Transmitter Installation

Table 2.3: Figure 2.3 Descriptions

Number	Description
1	ECMS2000 User Station
2	Microphone Port
3	Speaker Port
4	External Power Supply
5	PS/2 Port
6	Serial Port
7	Remote Workstation

Table 2.3: Figure 2.3 Descriptions (Continued)

Number	Description
8	Local Peripherals (attached via USB)
9	ECMS2000 Transmitter

Connecting power

The ECMS2000 user station features an external power supply. A DC power jack is located on the rear of the ECMS2000 user station.

NOTE: Use only the power supply provided by Avocent.

To connect power to the ECMS2000 user station:

1. Plug the external power supply's 2.5 mm connector into the DC power jack on the rear of the ECMS2000 user station.
2. Connect the detachable IEC power cord to the power supply.
3. Plug the IEC power cord into an appropriate wall outlet.

Networked installation

The following instructions will enable you to install your ECMS2000 user station and ECMS2000 transmitter in a networked configuration. In this installation, multiple ECMS2000 transmitters and ECMS2000 user stations are attached via the same Ethernet network. In this case, it is important for each unit to be configured with a unique IP address.

NOTE: In Desktop and Extender Modes, the ECMS2000 user station and ECMS2000 transmitter can obtain their IP address data from a DHCP server.

ECMS2000 transmitters and ECMS2000 user stations may be configured for use on a single subnet or for use across routers. Use of routers, however, will cause a slight increase in end-to-end latencies, which may not be acceptable for all applications.

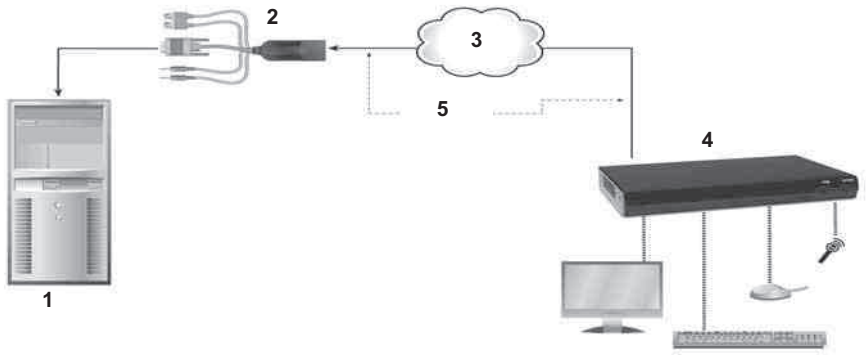

Figure 2.4: Networked Installation

Table 2.4: Figure 2.4 Descriptions

Number	Description
1	Remote Workstation
2	ECMS2000 Transmitter
3	IP Network
4	ECMS2000 User Station
5	UTP Cable

The ECMS2000 user station has been preconfigured with factory-default network settings. If you install only one ECMS2000 user station and one ECMS2000 transmitter on a subnet, you do not need to change these default network settings. If you install multiple units on the same subnet, you will need to assign a unique IP address to each unit or configure them for DHCP. This can be done via the serial port and must be carried out before displaying multiple devices on the same network. See Chapter 3 for more information.

NOTE: The DHCP server must be configured to assign IP addresses to the user station that do not expire. Do not change the mode to DHCP unless the equipment is connected to a DHCP server.

Table 2.5: Default Network Settings (ECMS2000 User Station)

Component	IP Address	Type	Default Gateway	Subnet Mask
ECMS2000 User Station	192.168.13.1	Static	0.0.0.0	255.255.255.0
ECMS2000 Transmitter	192.168.13.2	Static	0.0.0.0	255.255.255.0

To install the Emerge digital extender system on a network with the ECMS2000 user station:

1. With the ECMS2000 transmitter already connected to the remote workstation, connect it to the LAN via the unit's RJ-45 connector.
2. Connect the ECMS2000 user station to the peripherals. Use UTP cable to connect the ECMS2000 user station to the Ethernet network via the RJ-45 connector on the rear of the ECMS2000 user station.
3. Turn on the ECMS2000 user station. A connection will be automatically established with the remote workstation.
4. Use the serial menu to reconfigure the network settings for the ECMS2000 transmitter.

NOTE: If the ECMS2000 user station and ECMS2000 transmitter are to be located on different subnets, configure their network settings before you connect to the network.

NOTE: If there are already ECMS2000 transmitter and ECMS2000 user station pairs operating on the subnet, configure network settings of new ECMS2000 transmitter and ECMS2000 user station pairs before connecting them to the network.

5. Use the serial menu to reconfigure the network settings for the ECMS2000 user station.
6. Repeat this procedure for each ECMS2000 transmitter and ECMS2000 user station pair you wish to install on the network.

To install the Emerge digital extender system on a network in Desktop Mode:

1. Ensure that each ECMS2000 transmitter and ECMS2000 user station has a unique IP address.
2. Using the DM2000 Manager appliance, locate and add the units to the DM2000 Manager appliance database. For information on how to do this, refer to the Emerge® DM2000 Manager Installer/User Guide.

Installing the ECMS4000 User Station

Before installing your ECMS4000 user station, refer to the list below to ensure that you have all the items necessary for installation.

Needed to install the ECMS4000 user station

- Two External power supplies
- Two IEC power cords
- ECMS4000 User Station Quick Installation Guide
- KVM cable
- UTP cable (not supplied)
- Three-wire serial cable or null modem cable (not supplied)

Needed for non-standard installations

To connect a VGA monitor to the user station, a DVI to VGA adaptor is required (not supplied).

Mounting option

The ECMS4000 user station mounts to the rear of a flat panel monitor via a mounting plate accessory.

NOTE: Mounting accessories are ordered separately. Contact Avocent for more information.

Installation options

CAUTION: To reduce the risk of electric shock or damage to your equipment, disconnect the power from the user station or transmitter by unplugging the power supply from the electrical outlet. To reduce the risk of electric shock or damage to your equipment, turn on the remote workstation and the ECMS4000 user station in the order described in the following procedures.

You can install the Emerge digital extender system with the ECMS4000 user station either by a point-to-point or networked configuration.

Point-to-point installation

The following instructions will enable you to install your Emerge digital extender system in a point-to-point configuration. In a point-to-point configuration, no administrator setup of the ECMS4000 transmitter or the ECMS4000 user station is required. This enables you to install the system quickly, directly out-of-the-box. However, if you choose the point-to-point configuration, you can install only one ECMS4000 transmitter and ECMS4000 user station pair on a subnet and must also locate both on the same subnet as well.

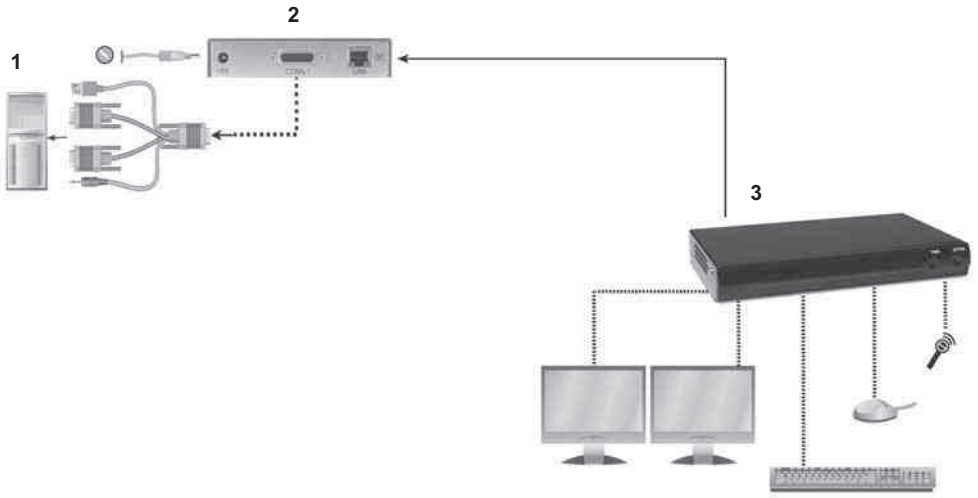

Figure 2.5: Point-to-Point Installation (ECMS4000 User Station)

Table 2.6: Figure 2.5 Descriptions

Number	Description
1	Remote Workstation
2	ECMS4000 Transmitter
3	ECMS4000 User Station

To connect the ECMS4000 transmitter:

Before connecting the ECMS4000 transmitter to the remote workstation, ensure that the resolution and the refresh rate of the remote workstation are supported by the ECMS4000 user station. Set the screen resolution and refresh rate of the remote workstation. Unsupported settings will cause blank video at the receiver.

NOTE: Visit www.avocent.com for updated information on supported resolutions and refresh rates.

1. Turn off the remote workstation.
2. Connect the USB connector on the ECMS4000 transmitter to the corresponding USB port on the workstation.

3. Connect the video connector and audio connector on the ECMS4000 transmitter to the appropriately labeled ports on the back of the workstation.

NOTE: For CD-quality audio, you must configure the ECMS4000 transmitter and the ECMS4000 user station using the serial menu.

4. Connect one end of the UTP cable to the ECMS4000 transmitter's RJ-45 connector and turn on the workstation.
5. Route the other end of the UTP cable to the location you have chosen for the ECMS4000 user station. If necessary, you can extend the UTP cable via junctions or a hub (subject to normal Ethernet cabling practices).

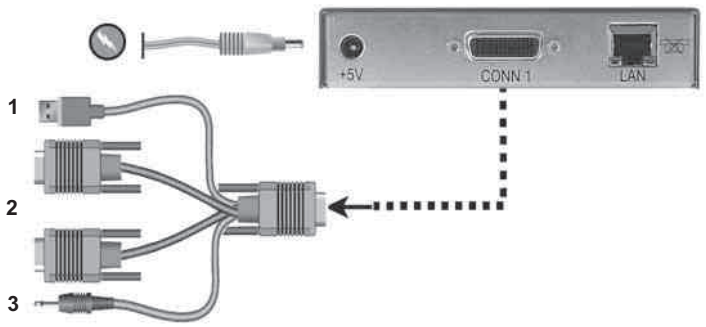

Figure 2.6: ECMS4000 Transmitter

Table 2.7: Figure 2.6 Descriptions

Number	Description
1	USB
2	Video
3	Line-out

To connect the ECMS4000 user station:

1. Connect your keyboard, monitor, mouse and other peripherals cables to the appropriately labeled ports on the back of the ECMS4000 user station.
2. Connect the UTP cable to the RJ-45 port on the back of the ECMS4000 user station.

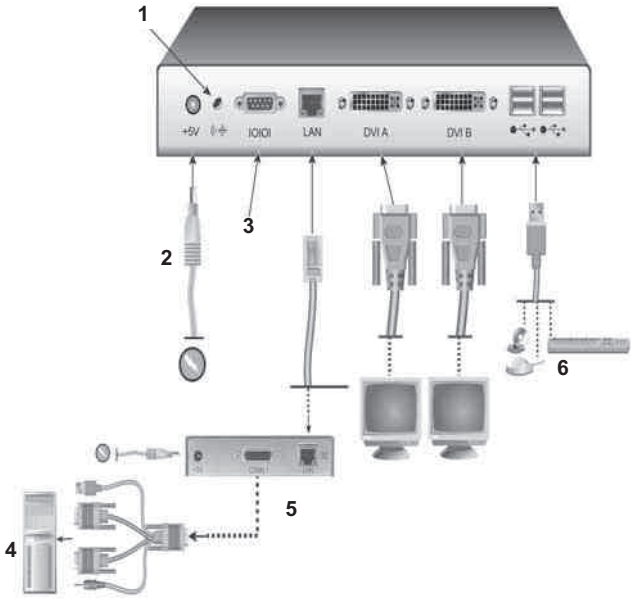

Figure 2.7: ECMS4000 User Station and ECMS2000 Transmitter Installation

Table 2.8: Figure 2.7 Descriptions

Number	Description
1	Speakers
2	External Power Supply
3	Serial Port
4	Remote Workstation
5	ECMS4000 Transmitter
6	Local Peripherals attached via USB

Connecting power

Both the ECMS4000 user station and ECMS4000 transmitter feature an external power supply. A DC power jack is located on the rear of each.

NOTE: Use only the power supply provided by Avocent.

To connect power to the ECMS4000 user station and ECMS4000 transmitter:

1. Plug the external power supply's 2.5mm connector into the DC power jack on the rear of the ECMS4000 user station and ECMS4000 transmitter.
2. Connect the detachable IEC power cord to the power supply.
3. Plug the IEC power cord into an appropriate wall outlet.

Networked installation

The following instructions will enable you to install your ECMS4000 user station and ECMS4000 transmitter in a networked configuration. In this installation, multiple ECMS4000 transmitters and ECMS4000 user stations are attached via the same Ethernet network. In this case, it is important for each unit to be configured with a unique IP address.

NOTE: In Desktop and Extender modes, the ECMS4000 user station and ECMS4000 transmitter can obtain their IP address data from a DHCP server.

Transmitters and ECMS4000 user stations may be configured for use on a single subnet or for use across routers. Use of routers, however, will cause a slight increase in end-to-end latencies, which may not be acceptable for all applications.

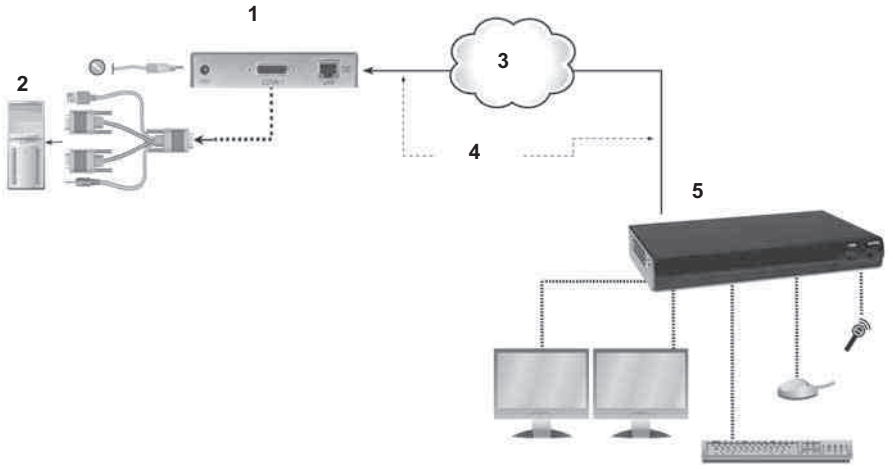

Figure 2.8: Networked Installation

Table 2.9: Figure 2.8 Descriptions

Number	Description
1	ECMS4000 Transmitter
2	Remote Workstation
3	IP Network
4	UTP Cable
5	ECMS4000 User Station

The ECMS4000 user station has been preconfigured with factory-default network settings. If you install only one ECMS4000 user station and one ECMS4000 transmitter on a subnet, you do not need to change these default network settings. If you install multiple units on the same subnet, you will need to assign a unique IP address to each unit or configure them for DHCP. This can be done via the serial port and must be carried out before displaying multiple devices on the same network.

NOTE: The DHCP server must be configured to assign IP addresses to the user station that do not expire. Do not change the mode to DHCP unless the equipment is connected to a DHCP server.

Table 2.10: Default Network Settings (ECMS4000 User Station)

Component	IP Address	Type	Default Gateway	Subnet Mask
ECMS4000 User Station	192.168.13.1	Static	0.0.0.0	255.255.255.0
ECMS4000 Transmitter	192.168.13.2	Static	0.0.0.0	255.255.255.0

To install the ECMS4000 user station and ECMS4000 transmitter on a network:

1. Connect the ECMS4000 transmitter to the remote workstation. Connect one end of the UTP cable to the ECMS4000 transmitter's RJ-45 connector. Connect the other end of the UTP cable to the Ethernet network.
2. Connect the ECMS4000 user station to the peripherals. Use a length of UTP cable to connect the ECMS4000 user station to the Ethernet network via the RJ-45 connector on the rear of the ECMS4000 user station.
3. Turn on the ECMS4000 user station. A connection will be automatically established with the remote workstation.
4. Use the serial menu to reconfigure the network settings for the ECMS4000 transmitter.

NOTE: If the ECMS4000 user station and ECMS4000 transmitter are to be located on different subnets, configure their network settings before you connect to the network.

NOTE: If there are already ECMS4000 transmitters and ECMS4000 user stations operating on the subnet, configure network settings of the new ECMS4000 transmitter and ECMS4000 user station pair before connecting them to the network.

5. Use the serial menu to reconfigure the network settings for the ECMS4000 user station.
6. Repeat this procedure for each ECMS4000 transmitter and ECMS4000 user station pair you wish to install on the network.

To install the Emerge digital extender system on a network in Desktop Mode:

1. Ensure that each ECMS4000 transmitter and ECMS4000 user station has a unique IP address.
2. Using the DM2000 Manager appliances, locate and add the units to the DM2000 Manager database. For information on how to do this, refer to the Emerge® DM2000 Manager Installer/User Guide.

CHAPTER 3

Operations

Overview

Operating a workstation through the Emerge digital extender system is no different than working directly connected to your workstation. All peripherals operate as if directly connected, even though the workstation is located at a distance. When you turn on the ECMS user station, a connection is automatically established with the workstation.

While the default settings of your Emerge digital extender system will work in most environments, you may configure the settings to better fit your system. Internal settings such as connection settings can be configured via the serial menu. You can also upgrade the Emerge digital extender system via the serial menu. See *Flash Upgrading your Emerge digital extender system* on page 45 for more information.

The administrator can configure Desktop Mode so that there is a fixed association between a user station and the target PC. A user can have a fixed association with a specific target PC or have access to other target PCs. The user may choose which target PC to connect to via the OSD.

LED identification

Front panel

There are two blue LEDs on the front panel of an ECMS user station. The *PWR* LED will light up when the user station has been turned on. The *ACTIVE* LED will blink slowly until the user station establishes a connection with the transmitter. When a connection has been established between the user station and transmitter, the *ACTIVE* LED will stop blinking and will remain lit.

Rear panel

Two LEDs are built into both the RJ-45 connector on the rear of the user station and into the RJ-45 connector on the transmitter.

Table 3.1: RJ-45 Connector LEDs

LED	Indication	Meaning
LED 1	Green static	Linked at 1 Gbps
	Green flashing	Linked at 100 Mbps
	Green off	No Link
LED 2	Yellow static	Linked but no activity
	Yellow flashing	Transmit/receive activity

Accessing the System

When an ECMS user station is turned on, it will automatically initiate a connection with the remote workstation. A series of messages will be displayed on the screen to inform you of the progress of the connection. You will be able to interact with the remote workstation as if it were located at your desk.

NOTE: If the remote workstation has been turned off, the ECMS user station cannot establish a connection.

OSD functions

The ECMS user station incorporates an On-Screen Display (OSD) that allows you to view information about the configuration of your system in Desktop Mode or Extender Mode.

Displaying system information using the OSD

The OSD enables you to display the firmware release of the user station and the transmitter. For optimum performance, keep your firmware current. The OSD also enables you to view the IP address and MAC address of both the ECMS user station and transmitter.

To display system information:

1. Press **Print Screen** and select the *User* tab to display user information for your ECMS user station.

Figure 3.1: User Dialog Box (Desktop Mode)

2. If the user has access to a list of target PCs, the Target dialog box will appear when the *Target* tab is selected. The Target dialog box displays a list of target PCs to which the user has access.

Figure 3.2: Target Dialog Box

3. Click the *Info* tab to view system information for your user station and transmitter.

4. Click the *Rcvr* radio button to view the system information for your user station.

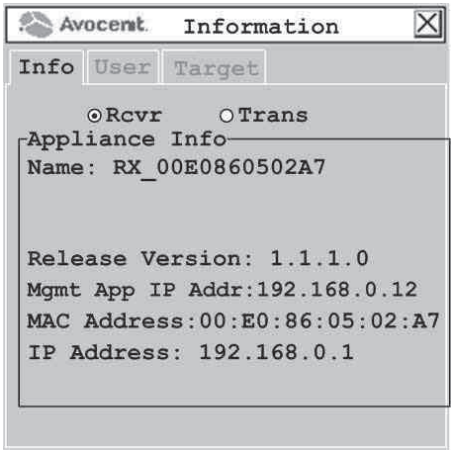

Figure 3.3: User Station Connected to Transmitter

-or-

Click the *Trans* radio button to view the system information for your transmitter.

NOTE: If there is no transmitter connected, the Trans radio button option will display as *No Target*.

To initiate a connection with a remote PC in Desktop Mode:

1. Press **Print Screen**.
2. Enter the Login Name and Password, ensuring that the appropriate keyboard has been selected.
3. Click the *OK* button to accept the changes. If the user has access to only one target PC, the login progress message will then appear and a connection will be established.

Figure 3.4: Login Screen

4. If the user has access to more than one target PC, then the list of target PCs is presented to the user via the OSD.
5. Click on the *Connect* button or on a target device in the list to establish a connection.

To initiate a connection with a remote PC in Matrix Mode:

1. Press **Print Screen.**
2. Enter the Login Name and Password, ensuring that the appropriate keyboard has been selected.
3. Click the *OK* button to accept the changes.
4. In Matrix Mode, the Target window displays.

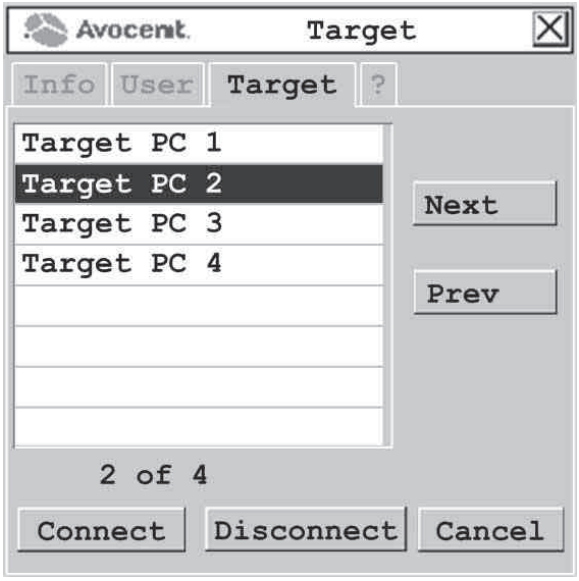

Figure 3.5: Target Screen (Matrix Mode)

5. Select the remote PC to which you wish to connect and click *Connect.*

NOTE: Once a remote PC has been selected, Matrix Mode denies access to any other user.

Access through Auto-Login Mode

Using the DM2000 Manager appliance, an administrator can enable Auto-Login Mode. Once this step is complete, the ECMS user station is reset by the DM2000 Manager appliance and it attempts to connect to the specified transmitter. A login progress message will be seen at this point.

NOTE: The OSD will clear after a defined period of inactivity. To reactivate the OSD, enter a valid hotkey sequence.

To display system information in Extender Mode:

1. Press **Print Screen**. In Extender Mode, the Info tab displays user information for your ECMS user station by default.

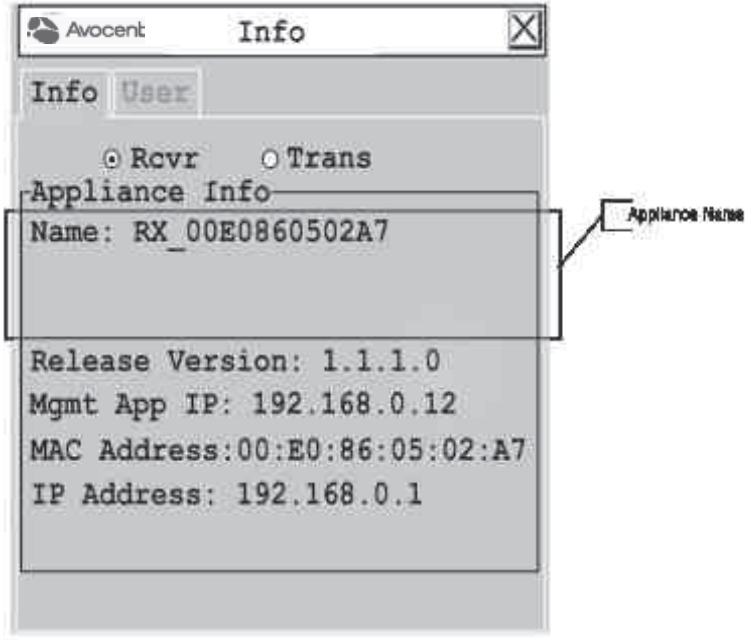

Figure 3.6: ECMS User Station Connected to Transmitter

2. Click the *Rcvr* radio button to view system information for your ECMS user station.

   -or-

   Click the *Trans* radio button to view the system information for your transmitter.

NOTE: If there is no transmitter connected, the Trans radio button option will display as *No Target*.

To close the OSD:

Press **ESC** or use the mouse to click the *X* button on the top right-hand corner of the OSD.

The Serial Menu

The ECMS user station incorporates a serial menu that allows you to:

- Configure network settings for the ECMS user station
- Configure network settings for the transmitter
- Set or change passwords

- Upgrade your firmware for the ECMS user station and transmitter
- Reset to factory defaults
- Set a session time-out value
- Change the audio performance settings
- Configure the transmitter for normal aspect or wide screen resolutions

Accessing the serial menu

You can access the serial menu via the serial port on the back of the ECMS user station. All terminal commands are executed through a terminal or PC running HyperTerminal® emulation software or equivalent. By default, two passwords are required to access the ECMS user station via the transmitter. One password controls access to the user station, the other password controls access to the transmitter. In both cases, the default password is **password**.

Items needed to access the serial menu

- Networked workstation with a serial port
- Null-modem serial cable (male DB9) or three-wire serial cable
- HyperTerminal emulation software or equivalent

NOTE: When utilizing the serial menu screens, the ECMS user station is sometimes referred to as the receiver.

To access the serial menu:

1. Connect one end of the serial cable to the serial port on the back of the ECMS user station.
2. Connect the other end of the serial cable to the serial port of your PC.
3. Launch HyperTerminal.
4. Within the COM1 Properties Port Settings tab, configure the HyperTerminal session for 57600 bits per second, 8 data bits, no parity, 1 stop bit and no flow control.

NOTE: Software (XON/XOFF) flow control is supported. However, it should not be used when using XMODEM.

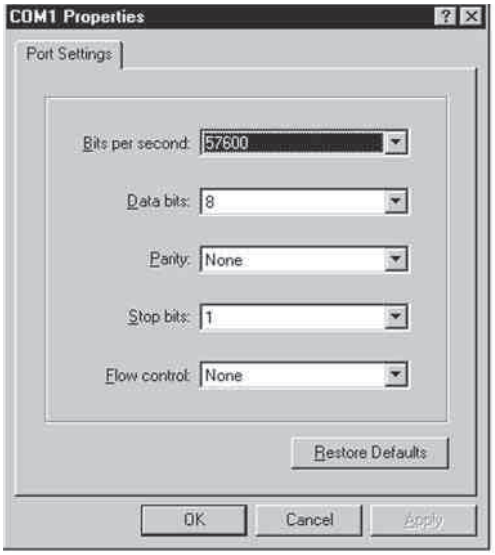

Figure 3.7: Com1 Properties

5. Confirm the HyperTerminal settings and click *OK*.
6. Press **Enter** to display the serial menu. The Appliance Selection Menu will be displayed.

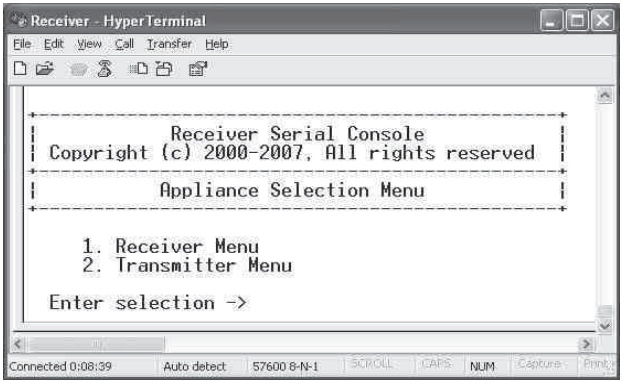

Figure 3.8: Appliance Selection Menu

7. Select the Receiver or Transmitter Menu by pressing **1** or **2** and pressing **Enter**. You will be prompted to enter a password.
8. Type the password and press **Enter**.

NOTE: If there is no transmitter connected to the ECMS user station, an error message will display and you will be returned to the Appliance Selection Menu.

Navigating the serial menu

To navigate through the serial menu, type the number or letter that corresponds to the option you wish to choose and press **Enter**. This action will bring you to a sub-menu or to a screen where you can make configuration changes. To exit a menu or screen and to confirm any configuration changes you have made, type **0** (zero) and press **Enter**. To navigate back up through the menus, continue to type **0** and press **Enter** at each screen.

Configuring Network Settings

Each Emerge digital extender system component is shipped with default network settings preconfigured for your ECMS user station and transmitter. You can change the default values for your system using the serial menu. If you wish, you can place the user station on a different subnet from the transmitter.

NOTE: IP address data can be obtained by DHCP or can be set to Static.

NOTE: It is recommended that you configure the network settings for the transmitter before you configure the network settings for the ECMS user station.

To configure network settings for the transmitter:

1. Press **Enter** to display the serial menu. The Appliance Selection Menu displays.
2. Press **2** to access the Transmitter Menu. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.

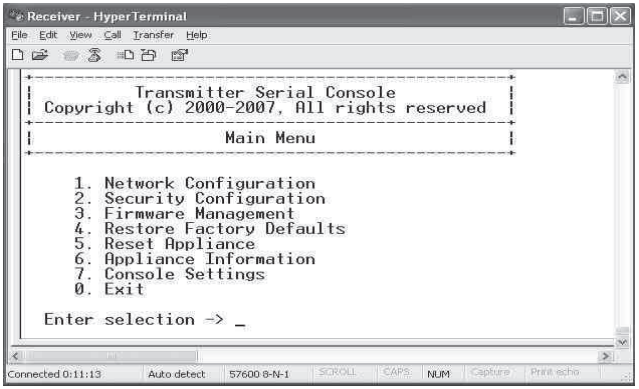

Figure 3.9: Transmitter Main Menu

NOTE: The Reset Appliance option in the Transmitter Main Menu applies only to network settings.

4. Press **1** to select the Network Configuration option and press **Enter.** The Network Configuration Menu will appear.

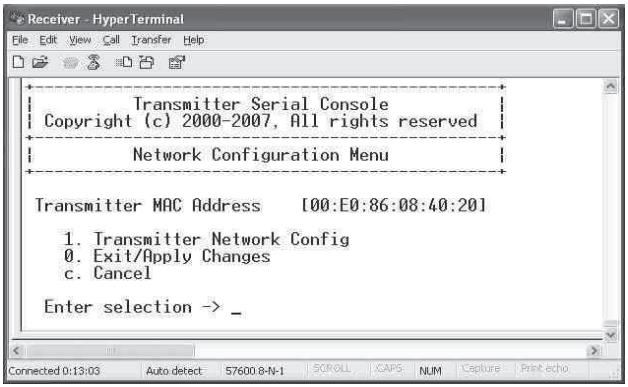

Figure 3.10: Network Configuration Menu

5. Press **1** to select the Transmitter Network Config option and press **Enter.** The Transmitter Network Configuration Menu will appear.

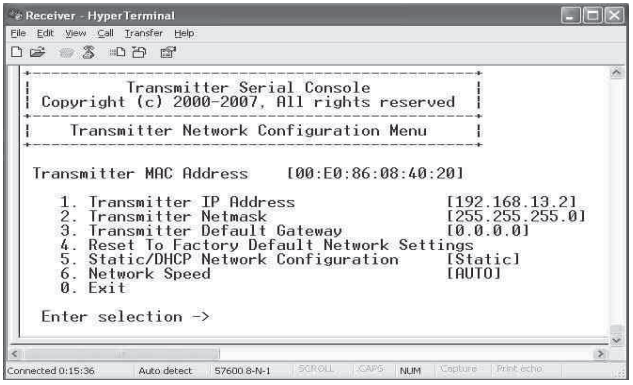

Figure 3.11: Transmitter Network Configuration Menu

NOTE: For option 5, the administrator can configure the transmitter IP address as DHCP or Static. Static is the default configuration.

6. Press **1** to select the Transmitter IP Address option and press **Enter**.
7. Type a valid IP address. Press **Enter** to return to the Transmitter Network Configuration Menu.
8. Press **2** to select the Transmitter Netmask option and press **Enter**.
9. Type a valid Transmitter Netmask. Press **Enter** to return to the Transmitter Network Configuration Menu.
10. Press **3** to select the Transmitter Default Gateway option and press **Enter**.

11. Type a valid Transmitter Default Gateway. Press **Enter** to return to the Transmitter Network Configuration Menu.
12. Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings, type **C** and press **Enter.**
13. A system message will appear that states *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.
14. Press option **1** to access the Receiver Menu (user station menu) and press **Enter**. If the password option is enabled, you will be prompted for a password.
15. Type the password and press **Enter**. The Receiver Main Menu will appear.

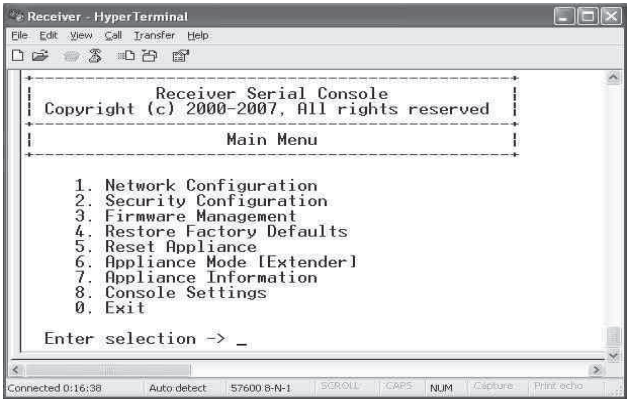

Figure 3.12: Receiver Main Menu

NOTE: The Network Configuration Menu is different for the Extender and Desktop modes.

To access the Network Configuration Menu in Extender Mode:

1. Press **1** to select the Network Configuration option and press **Enter**. The Network Configuration Menu (Extender Mode) appears.

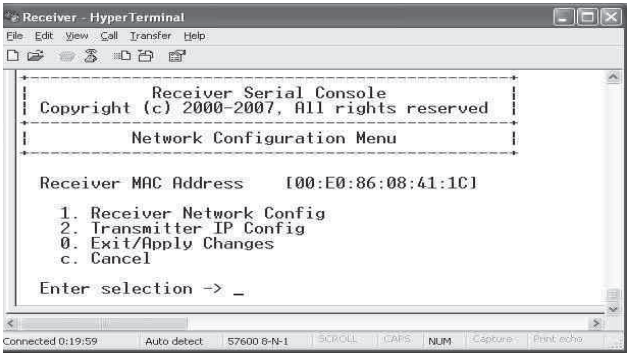

Figure 3.13: Network Configuration Menu (Extender Mode)

2. Press **2** to select the Transmitter IP Config option and press **Enter**. The Transmitter IP Config menu will appear. The old Transmitter IP address is displayed beside menu option 1.

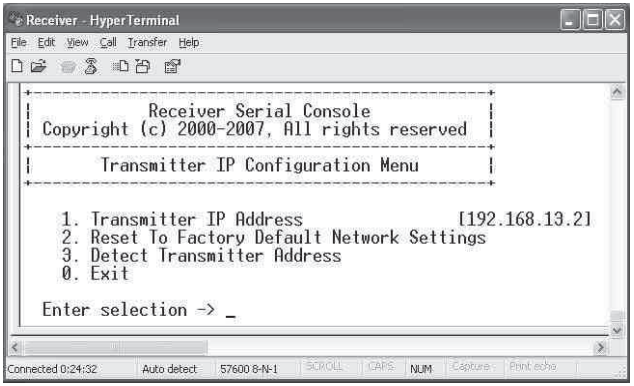

Figure 3.14: Transmitter Configuration Menu on the ECMS User Station

3. Press **1** to select the Transmitter IP Address option and press **Enter**. Type the new IP address for the transmitter and then press **Enter** to return to the Transmitter IP Configuration Menu.
4. Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings type **C** and press **Enter**.

The ECMS user station will now automatically reset to apply the new network configuration. You will be automatically returned to the Appliance Selection Menu screen. The connection to the transmitter will be automatically restored.

To access the Network Configuration Menu in Desktop Mode:

1. Press **6** to select Appliance Mode in the Receiver Main Menu and press **Enter**. The Appliance Mode Menu will appear.
2. Press **1** to select the Desktop Mode and press **Enter**.
3. To confirm your changes and apply those settings, type **0** (zero) and press **Enter**. You are now in Desktop Mode.

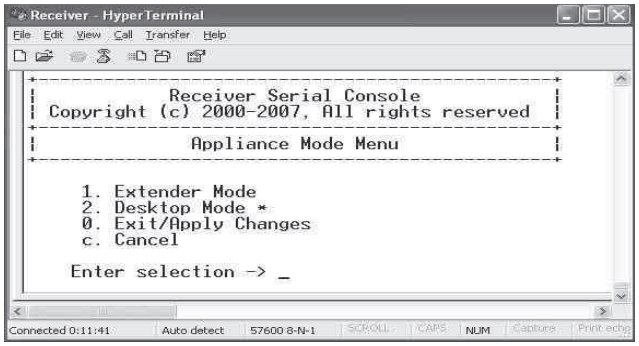

Figure 3.15: Appliance Mode Menu

4. Press **Enter** to activate the serial menu. The Appliance Selection Menu displays.
5. Press **1** to access the Receiver menu. If the password option is enabled, you will be prompted for a password.
6. Type the password and press **Enter**. The Receiver Main Menu (Desktop Mode) will appear.
7. Press **1** to select the Network Configuration option and press **Enter**. The Network Configuration Menu (Desktop Mode) will appear.

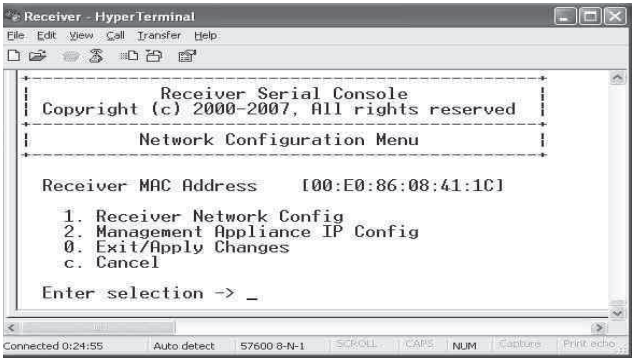

Figure 3.16: Network Configuration Menu (Desktop Mode)

To configure the network settings for the user station:

1. Press **1** to select the Receiver Network Config option in the Network Configuration Menu (in either Extender or Desktop Mode).
2. Press **Enter**. The Receiver Network Configuration Menu will appear.

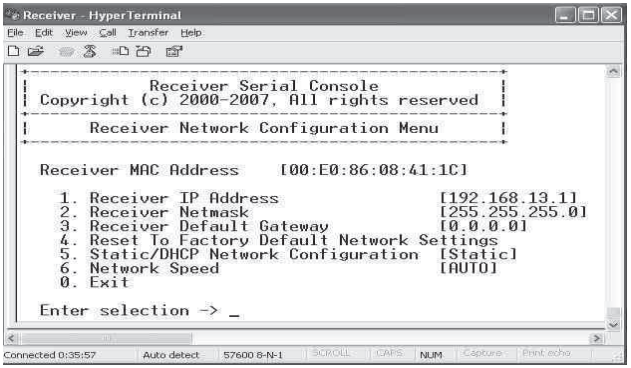

Figure 3.17: Receiver Network Configuration Menu (Extender and Desktop Mode)

NOTE: The Receiver Network Configuration Menu is identical in both Extender and Desktop modes.

NOTE: The reset option in the Receiver Network Configuration Menu applies only to network settings.

3. Press **1** to select the Receiver IP Address option and press **Enter**.
4. Type a valid IP address. Press **Enter** to return to the Receiver Network Configuration Menu.
5. Press **2** to select the Receiver Netmask option and press **Enter.**
6. Type a valid Receiver Netmask. Press **Enter** to return to the Receiver Network Configuration Menu.
7. Press **3** to select the Receiver Default Gateway option and press **Enter**.
8. Type a valid Receiver Default Gateway. Press **Enter** to return to the Receiver Network Configuration Menu.
9. Press **5** to select the Static/DHCP Network Configuration option to toggle between Static and DHCP mode. Press **Enter**
10. Type **0** (zero) and press **Enter** to return to the Network Configuration Menu. If you made a mistake and do not wish to save the changes you made to the network settings, type **C** and press **Enter.**

NOTE: Changes to network configurations are applied only after you exit the Network Configuration Menu.

The ECMS user station will now automatically reset to apply the new network configuration. During reset, the ECMS user station will drop its connection to the transmitter. You will be returned to the Appliance Selection Menu screen. The connection will be restored.

To access the Network Speed Menu:

1. Press **6** to select the Network Speed option in the Receiver Network Configuration Menu.
2. Press **Enter**. The Network Speed Menu will appear.

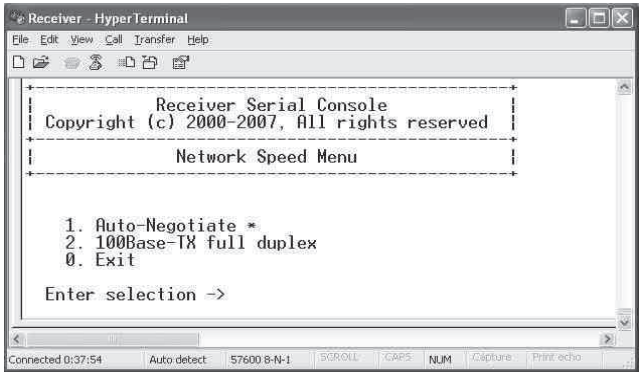

Figure 3.18: Network Speed Menu

NOTE: The currently selected network speed, Auto-Negotiate, is marked with an asterisk.

To access the DM2000 Manager IP Configuration Menu:

1. Press **6** to select the Appliance Mode option in the Receiver Main Menu.
2. Press **Enter**. The Appliance Mode Menu will appear.
3. Select the number for Desktop Mode and press **Enter**. You are now in Desktop Mode.
4. Activate the serial menu.
5. Press **1** to access the Receiver Main Menu and press **Enter.** If the password option is enabled, you will be prompted for a password.
6. Type the password and press **Enter**. The Receiver Main Menu (Desktop Mode) will appear.
7. Select the number for Network Configuration and press **Enter**. The Network Configuration Menu (Desktop Mode) will appear.

8. Press **2** to select the Management Appliance IP Configuration Menu in the Network Configuration Menu (Desktop Mode) and press **Enter**. The Management Appliance IP Configuration Menu will appear.

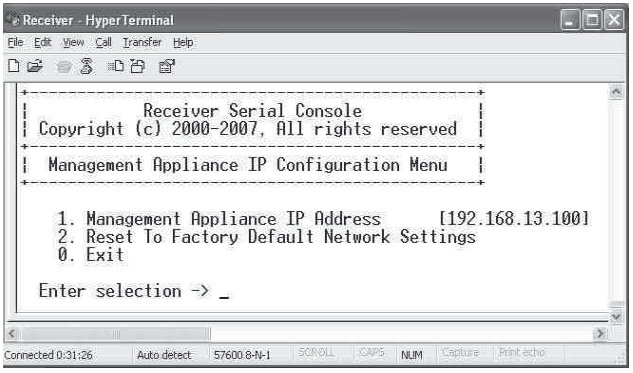

Figure 3.19: DM2000 Manager IP Configuration Menu

Detecting a transmitter IP address

In the event that you forget the IP address of a transmitter, you can use the serial menu to detect the IP address of a transmitter that is connected to the ECMS user station.

NOTE: This can only be done if the transmitter has been assigned a static IP address.

To detect the IP address of a connected transmitter:

1. Turn off the transmitter and directly connect it to the user station.

NOTE: If the transmitter receives its power from an external power supply, disconnect the transmitter from that external power supply.

2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.

3. Type the password and press **Enter**. The Receiver Main Menu will appear.

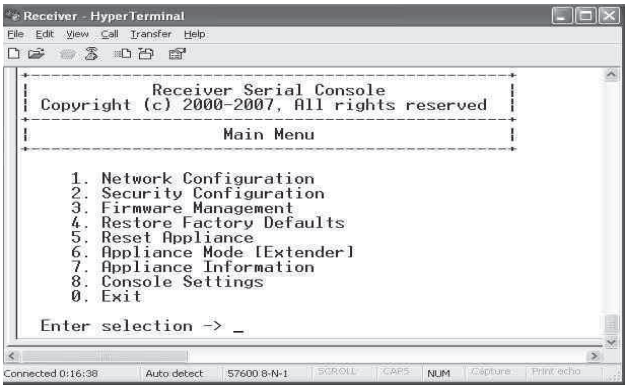

Figure 3.20: Receiver Main Menu

4. Press **1** to select Network Configuration and press **Enter**. The Network Configuration Menu will appear.

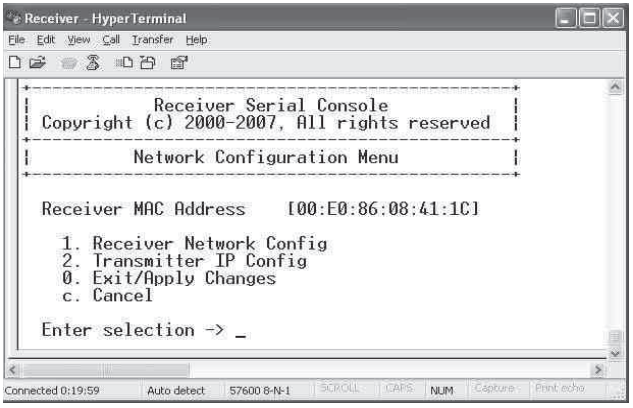

Figure 3.21: Network Configuration Menu

5. Press **2** to select Transmitter IP Config and press **Enter**. The Transmitter IP Config menu will appear. The old Transmitter IP address is displayed beside menu option 1.

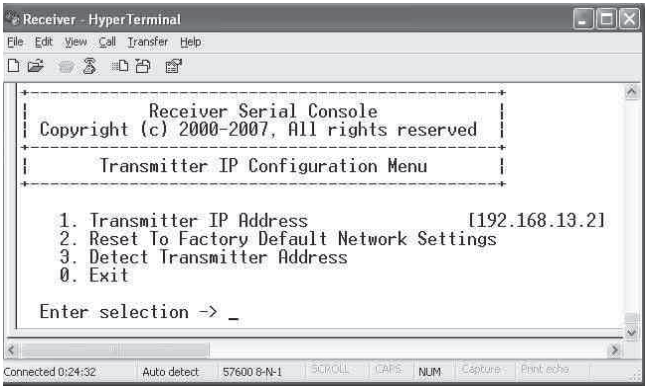

Figure 3.22: Transmitter IP Configuration Menu on the ECMS User Station

NOTE: This screen is available only in Extender Mode.

6. Press **3** to select Detect Transmitter Address and press **Enter**.
7. Turn on the transmitter.
8. The ECMS user station will detect and save the IP address of the connected transmitter. The Transmitter IP Configuration Menu will refresh, and the current IP address of the connected Transmitter will be displayed beside menu option 1.
9. To save your changes and exit the menu, type **0** (zero) and press **Enter**.

Authentication

By default, two passwords are required to access the Emerge digital extender system via the serial menu. One password is for access to the serial menus that control the ECMS user station. The other password is for access to the serial menus that control the transmitter. In both cases, the default password is **password**.

Authentication for the ECMS user station

You can change the password settings for the ECMS user station through the serial menu via the Receiver Security Configuration Menu.

To access the Receiver Security Configuration Menu:

1. Press **Enter** to display the serial menu. The Appliance Selection Menu will be displayed.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.

4. Press **2** to select the Security Configuration option and press **Enter**. The Security Configuration Menu will appear.

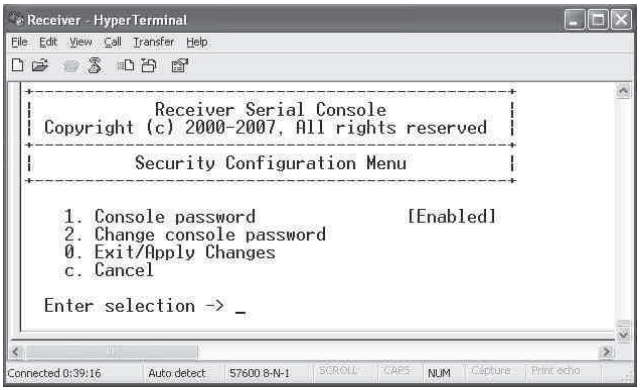

Figure 3.23: The Receiver Security Configuration Menu

To disable or enable the ECMS user station password:

1. Press **1** to select Console password and press **Enter**. If a password had been enabled, this action will disable the password.
2. If a password had been disabled, you will be prompted to enter a password.
3. Type the new password and press **Enter**.

NOTE: Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To change the user station password:

1. Press **2** to select Change console password and press **Enter**. You will be prompted to enter your current password.
2. Type your current password and press **Enter**. You will be prompted to enter the new password.
3. Type the new password and press **Enter**.

NOTE: Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To reset your user station password:

If you lose your user station password, you can reset the system to the default password with the help of Avocent Technical Support.

1. Press **Enter** to display the serial menu.
2. Press **1** to access the user station menu (if you lose your transmitter password, press **2** and continue with the following steps). Press **Enter**.
3. You will be prompted to enter your current password.
4. Type **??????** (six question marks) and press **Enter**. The serial menu will generate a code and display it to you. The code is a 16 character hex sequence. The serial menu will also prompt you to enter a Key.
5. Contact Avocent Technical Support to obtain the Key.
6. In the serial menu at the Key prompt, type the new 16 character hex sequence provided by Avocent Technical Support. Press **Enter**.
7. The default password is now active.

Authentication for the transmitter

You can change the password settings for the transmitter through the serial menu using the Transmitter Security Configuration Menu.

To access the Transmitter Security Configuration Menu:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **2** to access the Security Configuration menu and press **Enter**. The Security Configuration Menu will appear.

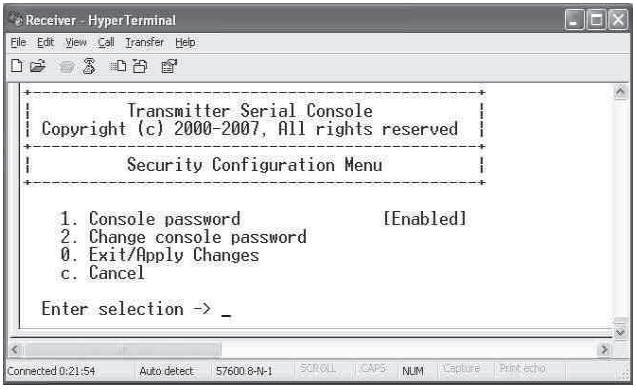

Figure 3.24: Transmitter Security Configuration Menu

To disable or enable the transmitter password:

1. Press **1** to access the Console password menu on the Security Configuration Menu and press **Enter**. If a password has been enabled, this action will disable the password.
2. If a password has been disabled, you will be prompted to enter a password.
3. Type the new password and press **Enter**.

NOTE: Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To save your changes and exit the menu, type **0** (zero) and press **Enter**.

To change the transmitter password:

1. Press **2** to access the Change Console password menu on the Security Configuration Menu and press **Enter**. You will be prompted to enter your current password.
2. Type your current password and press **Enter**. You will be prompted to enter the new password.
3. Type the new password and press **Enter**.

NOTE: Each password must consist of ASCII characters and contain between 6 and 64 characters.

4. Confirm the new password. If successful, you will see a message stating that the password has been changed.
5. Press **Enter**.
6. To confirm the new password and exit the screen, type **0** (zero) and press **Enter**.

Flash Upgrading your Emerge digital extender system

You can Flash upgrade your ECMS user station and transmitter using either XMODEM or HTTP. The ECMS user station and transmitter are upgraded separately using individual upgrade files. The upgrade files are supplied by Avocent. For optimum system performance keep your firmware versions current.

NOTE: Do not use software (XON/XOFF) flow control when using XMODEM.

NOTE: It is recommended that you flash upgrade the transmitter before you flash upgrade the ECMS user station. Transmitters and user stations should have the same version for guaranteed operation.

To Flash upgrade your transmitter using XMODEM:

1. Download the transmitter upgrade file from Avocent.
2. Press **Enter** to display the Serial Menu.

3. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Transmitter Main Menu will appear.
5. Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.

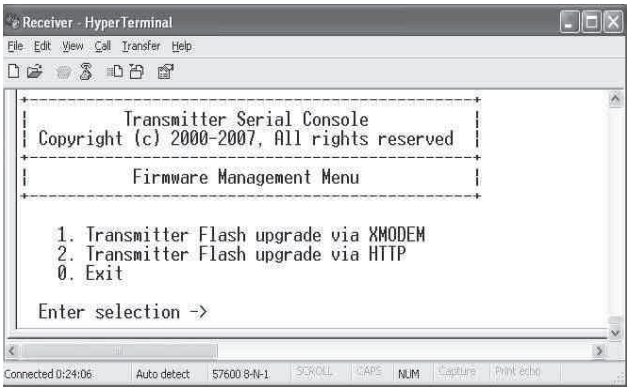

Figure 3.25: Transmitter Firmware Management Menu

6. Press **1** to select the Transmitter Flash upgrade via XMODEM menu. Press **Enter**
7. Specify the location of the upgrade file and initiate the file transfer.
8. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance.* During reset the transmitter will drop the connection to the ECMS user station. A second system message will appear that states: *Connection to the transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.

NOTE: If the transmitter determines that the upgrade file is invalid, the transmitter cancels the upgrade and maintains the previous firmware version. A message displays indicating that the upgrade has failed.

To Flash upgrade your transmitter using HTTP:

1. Download the Transmitter upgrade file from Avocent.
2. Press **Enter** to display the serial menu.
3. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Transmitter Main Menu will appear.
5. Press **5** to access the Firmware Management Menu. The Firmware Management Menu will appear.
6. Press **2** to select Transmitter Flash upgrade via HTTP and press **Enter**. You will be prompted to enter the URL for the upgrade file.

7. Enter the URL for the upgrade file using the following syntax:
   http://<server ip address>[:server port]/<upgrade file path>
   For example:
   http://192.168.13.3:8080/TX.dld

NOTE: If the server is set up on standard port 80, the port information can be omitted.

8. To initiate the file transfer, press **Enter**. The connection to the transmitter will be dropped.
9. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*. During reset the transmitter will drop the connection to the ECMS user station. A second system message will appear that states: *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu screen.

NOTE: If the transmitter determines that the upgrade file is invalid, the transmitter cancels the upgrade and maintains the previous firmware version. A message displays indicating that the upgrade has failed.

To Flash upgrade your ECMS user station using XMODEM:

NOTE: It is recommended that you flash upgrade the transmitter before you flash upgrade the ECMS user station.

1. Download the ECMS user station upgrade file from Avocent.
2. Press **Enter** to display the serial menu.
3. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Receiver Main Menu will appear.
5. Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.

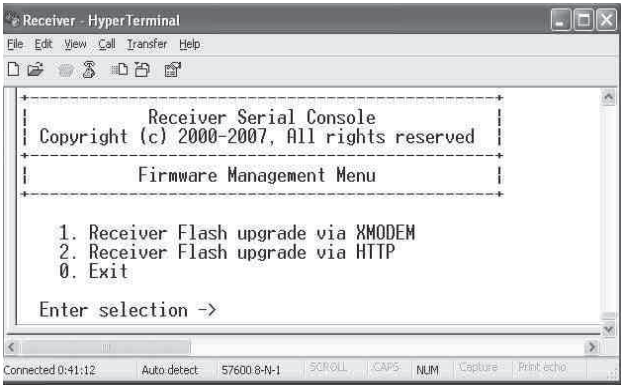

Figure 3.26: Receiver Firmware Management Menu

6. Press **1** to select Receiver Flash upgrade via XMODEM and press **Enter**. The connection to the transmitter will be dropped.

7. Specify the location of the upgrade file and initiate the file transfer.
8. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*.
9. The connection to the ECMS user station will be restored.

NOTE: If the ECMS user station determines that the upgrade file is invalid, the ECMS user station cancels the upgrade and maintains the previous firmware version. A message will display indicating that the firmware upgrade has failed.

To Flash upgrade your ECMS user station using HTTP:

1. Download the ECMS user station upgrade file from Avocent.
2. Press **Enter** to display the serial menu.
3. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
4. Type the password and press **Enter**. The Receiver Main Menu will appear.
5. Press **5** to access the Firmware Management Menu and press **Enter**. The Firmware Management Menu will appear.
6. Press **2** to select Receiver Flash upgrade via HTTP and press **Enter**. You will be prompted to enter the URL for the upgrade file.
7. Enter the URL for the upgrade file using the following syntax:
   http://<server ip address>[:server port]/<upgrade file path>
   For example:
   http://192.168.13.3:8080/RX.dld

NOTE: If the server is set up on standard port 80, the port information can be omitted.

8. To initiate the file transfer, press **Enter**. The connection to the transmitter will be dropped.
9. When the transfer has completed, a message will display stating *Firmware update successful. Resetting Appliance*.
10. The connection to the transmitter will be restored.

NOTE: If the ECMS user station determines that the upgrade file is invalid, the ECMS user station cancels the upgrade and maintains the previous firmware version. A message will display indicating that the firmware upgrade has failed.

Restoring Factory Default Settings

The serial menu enables you to easily restore the factory default settings of both the ECMS user station and the transmitter.

NOTE: Restoring factory default settings will also reset network settings. Before restoring factory default settings, assess whether this is likely to cause conflicts with other devices on the network.

To restore the ECMS user station or transmitter factory default settings:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu or press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver or Transmitter Main Menu will appear.
4. Press **4** to access the Restore Factory Defaults menu and press **Enter**.
5. Defaults will now automatically reset. You will be automatically returned to the Appliance Selection Menu.
6. During reset, the ECMS user station will drop the connection to the transmitter. When reset is complete, the ECMS user station will restore the connection to the transmitter using the new settings.

Resetting the Emerge Digital Extender System

To reset the ECMS user station:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. The Receiver Main Menu will appear.

4. Press **5** to access the Reset Appliance Menu and press **Enter**. The Reset Appliance Menu will appear.

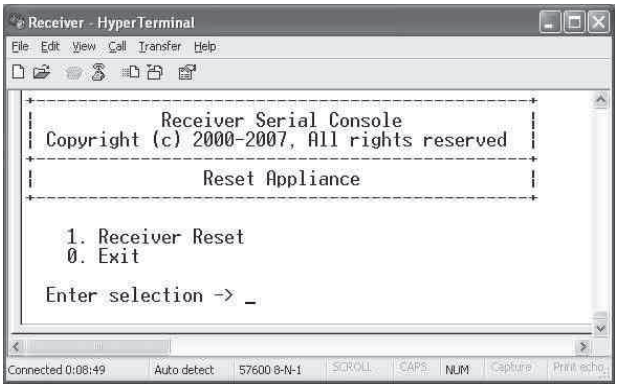

Figure 3.27: Receiver Reset Appliance Menu

5. Press **1** and **Enter** to access the Receiver Reset menu to initiate the reset. A message will be displayed on the serial menu that states *Resetting appliance*. During reset, the connection to the transmitter is dropped. When the reset is complete, you will be automatically returned to the Appliance Selection Menu. The connection to the transmitter will be automatically restored.

To reset the transmitter:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password. The Transmitter Main Menu will appear.
3. Press **5** to access the Reset Appliance menu and press **Enter**. The Reset Appliance Menu will appear.
4. Press **1** and **Enter** to access Receiver Reset Menu to initiate the reset. A message will be displayed on the serial menu that states *Resetting appliance*. During reset, the transmitter will drop the connection to the user station. A second system message will appear that states: *Connection to the Transmitter is lost*. You will be automatically returned to the Appliance Selection Menu. The connection will be automatically restored.

Viewing System Information

The serial menu enables you to display the firmware release and details of the ECMS user station and of the transmitter.

To view ECMS user station system information:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.

3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **7** to access the Appliance Information menu and press **Enter**. The Appliance Information Menu will appear.

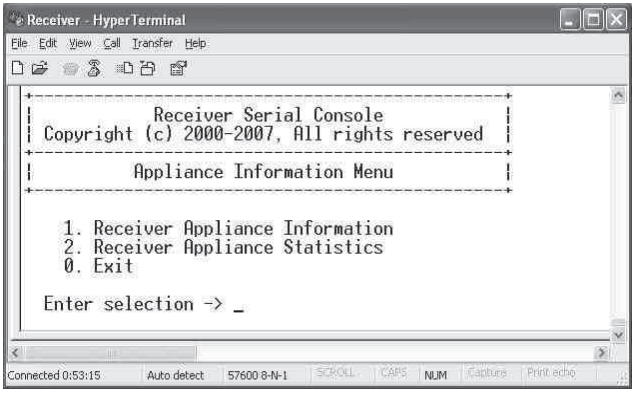

Figure 3.28: Appliance Information Menu

5. Press **1** to access the Receiver Appliance Information Menu and press **Enter**. The Receiver Appliance Information Menu appears.

NOTE: The term “receiver appliance” is used interchangeably with “user station.”

The Receiver Appliance Information Menu screen contains the following information and all values are read-only:

- user station name
- EID number
- release version
- application
- boot and FPGA firmware version numbers
- manufacturing part number

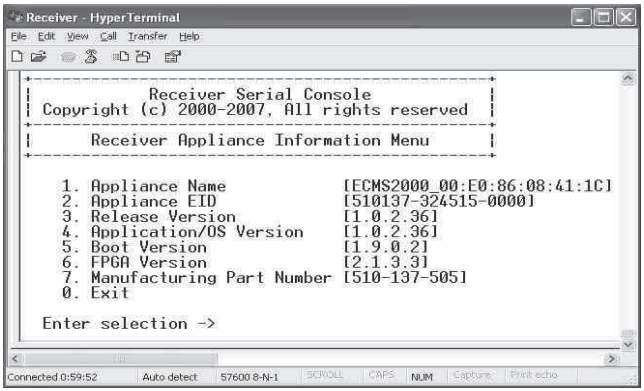

Figure 3.29: Receiver Appliance Information Menu

To view transmitter system information:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **6** to access the Appliance Information Menu and press **Enter**. The Appliance Information Menu will appear.
5. Press **1** to access the Transmitter Appliance Information Menu and press **Enter**. The Transmitter Appliance Information Menu will appear.

The Transmitter Appliance Information Menu screen contains the following information and all values are read-only:

- transmitter name
- EID number
- release version
- application
- boot and FPGA firmware version numbers
- manufacturing part number

Configuring Video Input Settings

The ECMS2000 user station is capable of transmitting either digital (DVI) or analog video (VGA) from the remote workstation to your monitor. The ECMS4000 user station is capable of transmitting DVI only from the remote workstation to your analog digital monitor. The Emerge digital extender system will normally operate well when set on its default settings. The ECMS2000 user station needs the transmitter to be set for the dedicated video type to operate correctly.

NOTE: Video-display problems may occur if video input settings are not configured correctly,

To configure video input settings:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **7** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will display. The current video input setting is displayed beside menu item 1.

NOTE: Under Video Performance, the number 1 signifies lowest quality while 5 signifies highest quality.

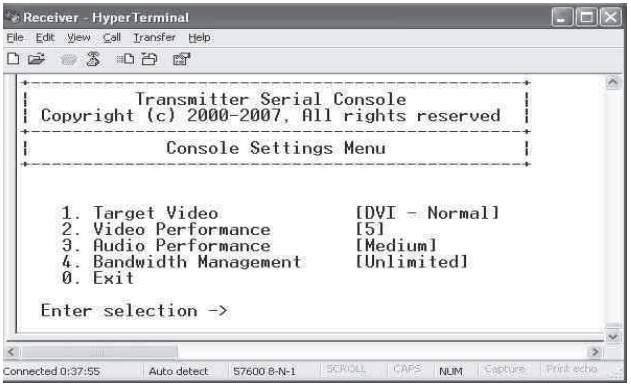

Figure 3.30: Transmitter Console Settings Menu

5. Press **1** to access the Target Video and press **Enter**. The Target Video Menu will display.

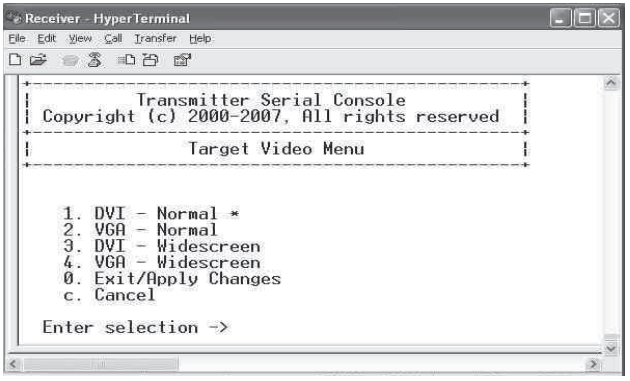

Figure 3.31: Transmitter Target Video Menu

6. Press **1** to select DVI Normal and press **Enter**.

7. Select the appropriate menu item.
8. To save your changes and exit the menu, type **0** (zero) and press **Enter**. The unit resets.

Session Retry Settings

The ECMS user station is designed to automatically establish a connection between the ECMS user station and the remote workstation. By default, if the ECMS user station cannot immediately establish a connection with the remote workstation it will retry once per second until a connection is successfully established. You can change the default session retry settings using the serial menu.

To access the Session Retry Menu:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear.
5. Press **1** to access the Session Retry Menu and press **Enter**. The Session Retry Menu will appear.

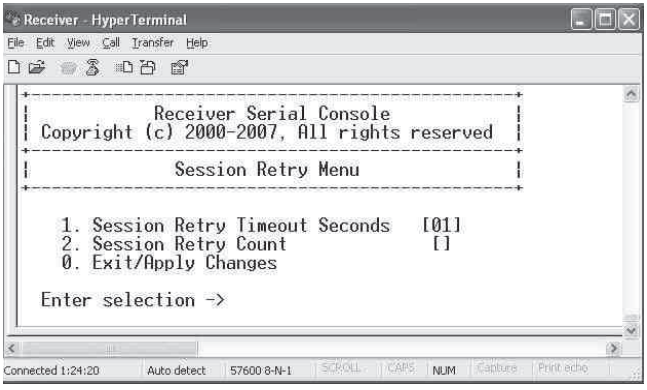

Figure 3.32: Session Retry Menu

To change the retry settings:

1. Access the Session Retry Menu via the serial menu as described above.
2. To change the time interval between retry attempts, press **1** to choose the Session Retry Timeout Seconds option and press **Enter**. You will be prompted to enter a new timeout value in SS (seconds) format.
3. Type a value between 1 and 60 (inclusive) and press **Enter**.

To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

Configuring the OSD Hotkey Sequence

To change the hotkey sequence that activates your OSD:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Setting Menu. The Console Settings Menu will appear. Your currently selected OSD hotkey sequence is displayed beside menu item 1.

NOTE: The layout of the Console Settings Menu is different for the Desktop and Extender modes. In this example, the screen is in Extender mode.

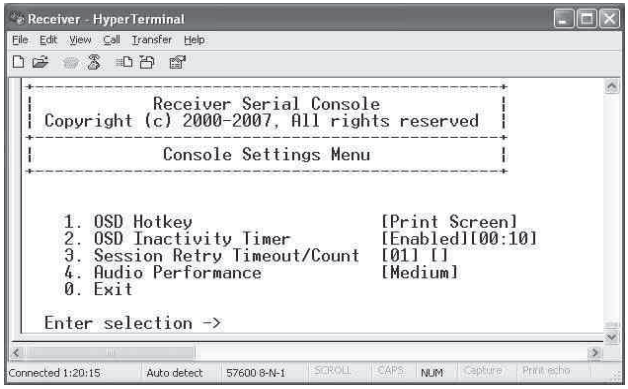

Figure 3.33: Receiver Console Settings Menu (Extender Mode)

5. Press **1** to access the OSD Hotkey Menu and press **Enter**. The OSD Hotkey Menu will appear. This menu shows you the hotkey sequences that you can choose from. The current hotkey sequence is indicated by an asterisk symbol **.**

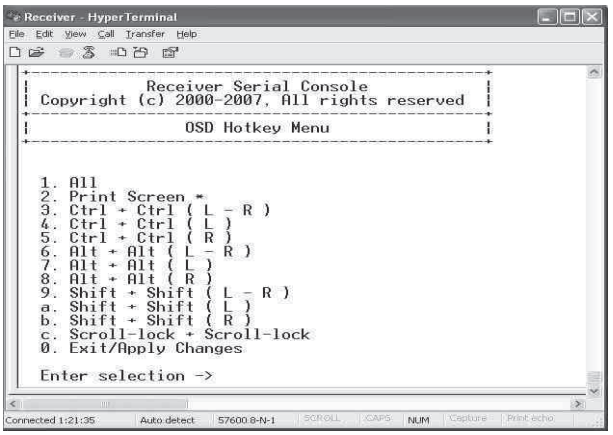

Figure 3.34: OSD Hotkey Menu

6. Type the number that corresponds to the hotkey sequence you wish to apply and press **Enter**.
7. To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

Table 3.1: OSD Hotkey Sequences

Hotkey Sequences	
All	Print Screen (Default)
Ctrl + Ctrl (L - R)	Ctrl + Ctrl (L)
Ctrl + Ctrl (R)	Alt + Alt (L - R)
Alt + Alt (L)	Alt + Alt (R)
Shift + Shift (L - R)	Shift + Shift (L)
Shift + Shift (R)	Scroll Lock + Scroll Lock

OSD Inactivity Timeout

By default, the ECMS user station is configured to dismiss the OSD after an inactivity period of 10 minutes. To reactivate the OSD, you must enter a valid OSD hotkey sequence.

Using the serial menu, you can modify the default configuration. You can disable the OSD timeout or you can change the time-out period to any value between zero minutes and 10 hours. Setting the time-out period to zero means that the OSD will not timeout. The maximum time-out period that can be configured is 9 hours and 59 minutes.

NOTE: You can dismiss the OSD at any time by pressing **ESC.**

To change the OSD timeout period:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current OSD Timeout configuration is displayed beside menu item 2.

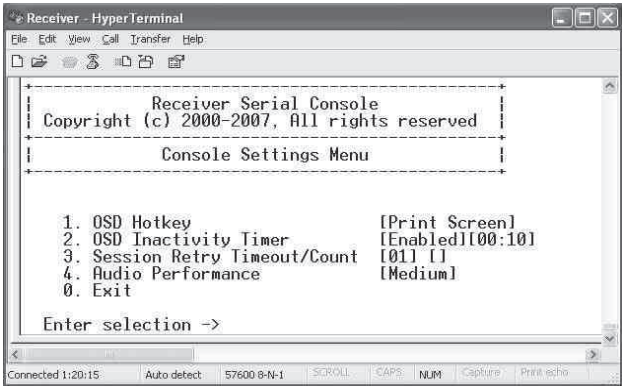

Figure 3.35: Receiver Console Settings Menu

5. Press **2** to access the OSD Inactivity Timer and press **Enter**. The OSD Inactivity Timer Menu will appear.

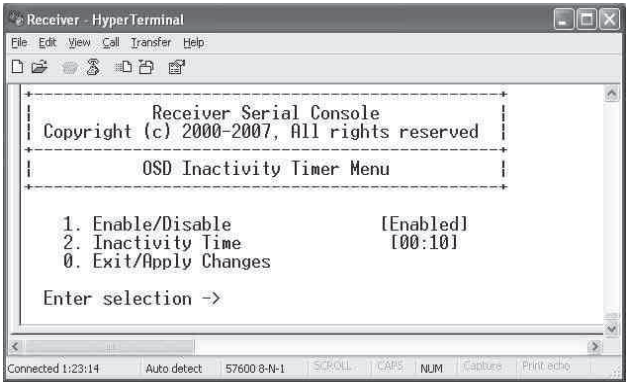

Figure 3.36: OSD Inactivity Timer Menu

6. Press **2** to choose Inactivity Time and press **Enter**. You will be prompted to enter a time-out period in the format hours:minutes (HH:MM). The maximum time-out period you can enter is 9 hours and 59 minutes (09:59).

7. Type the time-out period and press **Enter**.
8. To confirm your selection and exit the screen, type **0** (zero) and press **Enter**.

NOTE: To disable the OSD timeout, choose *Disable* in the OSD Inactivity Timer Menu.

Audio Performance Settings

You can use this option to modify the audio performance settings or to disable audio support. There are three settings available: high, medium and off. The high setting provides the best audio performance and should be used when high network bandwidth is available. The medium setting should be used if network bandwidth is limited or if the network latency is high. If you choose *off,* audio support will be disabled.

NOTE: To ensure that audio operates correctly, configure the ECMS2000 user station and the transmitter with identical audio performance settings.

To change the audio performance setting for the transmitter:

1. Press **Enter** to display the serial menu.
2. Press **2** to access the Transmitter Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Transmitter Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current audio performance setting is displayed beside menu item 3.

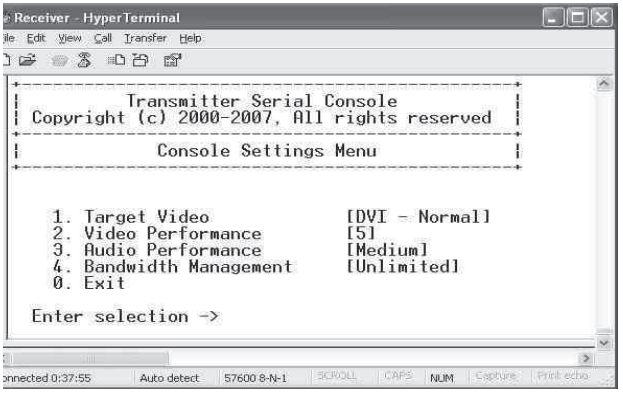

Figure 3.37: Transmitter Console Settings Menu

5. Press **3** to access the Audio Performance Menu and press **Enter**. The Audio Performance Menu shows you the audio settings that you can choose from. The current setting is indicated by an asterisk symbol.

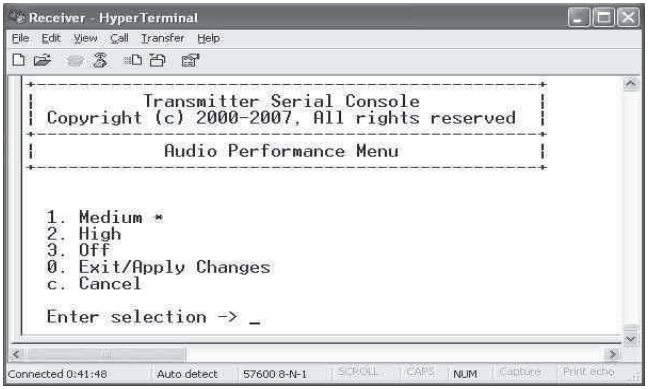

Figure 3.38: Transmitter Audio Performance Menu

6. Type the number that corresponds to the audio setting you wish to apply and press **Enter**.
7. To confirm your selection and exit the screen, type **0** (zero) and press **Enter**. The unit resets after you press **Enter.**

To change the audio performance setting for the ECMS user station:

1. Press **Enter** to display the serial menu.
2. Press **1** to access the Receiver Main Menu and press **Enter**. If the password option is enabled, you will be prompted for a password.
3. Type the password and press **Enter**. The Receiver Main Menu will appear.
4. Press **8** to access the Console Settings Menu and press **Enter**. The Console Settings Menu will appear. The current audio performance setting is displayed beside menu item 4, Audio Performance.

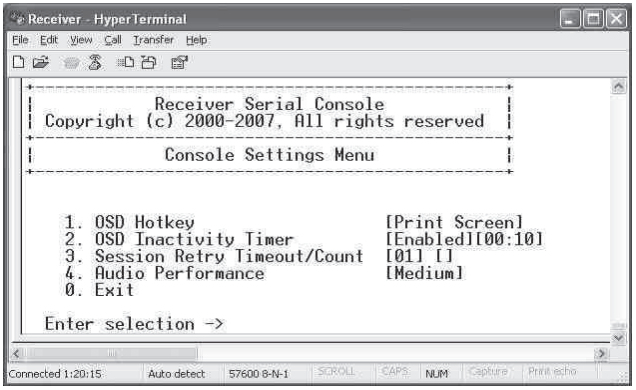

Figure 3.39: Receiver Console Settings Menu

5. Press **4** to access the Audio Performance Menu and press **Enter**. The Audio Performance Menu will appear. This menu shows you the audio settings that you can choose from. The current setting is indicated by an asterisk.

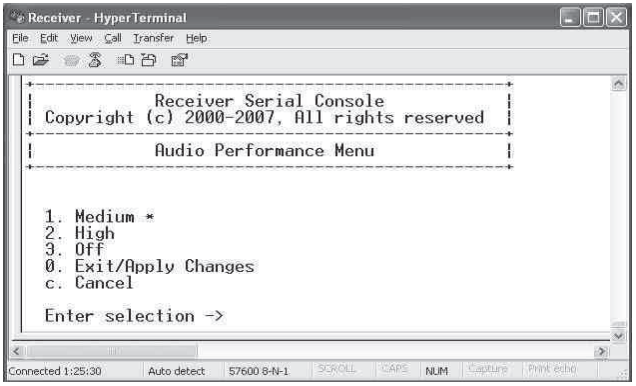

Figure 3.40: Receiver Audio Performance Menu

6. Type the number that corresponds to the audio setting you wish to apply and press **Enter**.

NOTE: If you choose *off*, audio support will be disabled.

7. To confirm your selection and exit the screen, type **0** (zero) and press **Enter**. The unit resets after you press **Enter**.

APPENDICES

Appendix A: Technical Specifications

NOTE: During the course of this product's lifetime, modifications might be made to its hardware or firmware that could cause these specifications to change without notice.

Table A.1: ECMS4000 User Station Product Specifications

Network	
Ethernet Standard	Ethernet II
IP Port Usage	Port 16384 - Video Port 16388 - Video Port 16385 - Audio Port 16386 - Keyboard\Mouse Port 16387 - vMedia Ports 4463, 4464, 4465 - Control
Extension Ports	
Number	1
Connectors	RJ-45
User Ports	
Number	USB: 4; DVI-I video: 2; audio line-out: 1; power jack: 1
Type	USB Type A, DVI-I video
Connectors	USB Type A, USB keyboard and mouse; DVI-I, female; 3.5 mm stereo audio jack, line out; 2.5 mm DC power jack
Encryption	
Type	Authenticated SSL
Console Port	
Number	1
Type	Three-wire serial interface: RX, TX, GND via 16450-compatible UART
Connectors	9-pin D-Shell (DB9)

Table A.1: ECMS4000 User Station Product Specifications (Continued)

Dimensions	
H x W x D	28 x 210 x 140 mm (1.10 x 8.27 x 5.51 in)
Weight	0.95 Kg (2.09 lb) without packaging, cables, power supply and literature
Environmental	
Heat Dissipation	22 W/H
Power Consumption	20 W (including power supplied to USB ports)
AC-input power	100-240 VAC
AC-input current rating	1 A
AC-frequency	50/60 Hz
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%
Supported Hardware	
Peripherals	USB keyboard and mouse, speakers
Keyboard	Standard 104/105/109 keyboards for PC, Macintosh and Sun; USB keyboards for PC, Macintosh and Sun; Default keyboard drivers are fully supported for Microsoft Windows, Mac OS, Solaris and Red Hat® Linux
Mouse	2-, 3-, and 5-button; scroll and tilt wheel
Mass Storage Devices	All Mass Storage Class devices that use: SCSI Mass Storage subclass Bulk Only Transfer Protocol

Table A.1: ECMS4000 User Station Product Specifications (Continued)

Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 720 x 480 @ 60 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1600 x 1200 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz, 60 Hz 1440 x 900 @ 60 Hz 1920 x 1200 @ 60 Hz (DVI monitor only) **NOTE:**The ECMS will support 60 FPS on all resolutions up to 1440 x 900. Dual head rate are: • 1600 x 1200 - 45 FPS • 1920 x 1200 - 39 PS Single head rate is 60 FPS on all resolutions.
Video Standard	DDC version 2B
Color Depth	24 Bit
Audio Standard	PC99
Audio Performance	
High Performance	Line-out: 44.1 kHz over stereo channels at a resolution of 16 bits
Medium Performance	Line-out: 8 kHz over stereo channels at a resolution of 16 bits
Target Sync Types (Analog output only)	Separate horizontal and vertical
Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI

Table A.2: ECMS4000 Transmitter Specifications

Network	
Ethernet Standard	Ethernet II
Extension Ports	

Table A.2: ECMS4000 Transmitter Specifications (Continued)

Number	1
Connectors	RJ-45
Console Ports	
Number	USB: 1; DVI-I video: 2; audio line-out: 1
Type	USB Type A, DVI-D video
Connectors	USB, male; DVI-I, male; 3.5 mm stereo audio jack, 2.5 mm DC power jack
Encryption	
Type	Authenticated SSL
Dimensions	
H x W x D	28 x 127 x 200 mm (1.10 x 5.00 x 7.87 in)
Weight	0.75 Kg (1.65 lb) including cables
Environmental	
Heat Dissipation	22 W/H
Power Consumption	20 W
AC-input power	100-240 VAC
AC-input current rating	1 A
AC-frequency	50/60 Hz
DC-input power	5 V
DC-input current rating	1.1 A
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%
Supported Hardware	
Network	
Ethernet Standard	Ethernet II

Table A.2: ECMS4000 Transmitter Specifications (Continued)

Extension Ports	
Number	1
Connectors	RJ-45
Console Ports	
Number	USB: 1; DVI-I video: 2; audio line out: 1
Type	USB Type A, DVI-D video
Connectors	USB, male; DVI-I, male; 3.5 mm stereo audio jack, 2.5 mm DC power jack.
Encryption	
Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 720 x 480 @ 60 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1600 x 1200 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz, 60 Hz 1440 x 900 @ 60 Hz 1920 x 1200 @ 60 Hz (DVI monitor only) **NOTE:** The ECMS will support 60 FPS on all resolutions up to 1440 x 900. Dual head rates are: • 1600 x 1200 - 45 FPS • 1920 x 1200 - 39 PS Single head rate is 60 FPS on all resolutions.
Video Standard	DDC version 2B

Table A.3: ECMS2000 User Station Product Specifications

Network	
Ethernet Standard	Ethernet II

Table A.3: ECMS2000 User Station Product Specifications (Continued)

IP Port Usage	Port 16384 - Video Port 16385 - Audio Port 16386 - Keyboard\Mouse Port 16387 - vMedia Ports 4463, 4464, 4465 - Control
Extension Ports	
Number	1
Connectors	RJ-45

Table A.3: ECMS2000 User Station Product Specifications (Continued)

User Ports	
Number	PS/2: 2; USB: 4; DVI-I video: 1; audio microphone: 1; audio line out: 1; power jack: 1
Type	PS/2, USB Type A, DVI-I video
Connectors	6-pin miniDIN, PS/2 keyboard and mouse; USB Type A, USB keyboard and mouse; DVI-I, female; 3.5 mm stereo audio jacks, line-out and mic; 2.5 mm DC power jack
Encryption	
Type	Authenticated SSL
Console Port	
Number	1
Type	Three-wire serial interface: RX, TX, GND via 16450-compatible UART
Connectors	9-pin D-Shell (DB9)
Dimensions	
H x W x D	28 x 210 x 130 mm (1.04 x 8.27 x 5.12 in)
Weight	0.7 Kg (1.54 lb) without packaging, cables, power supply and literature
Environmental	
Heat Dissipation	22 W/H
Power Consumption	20 W (including power supplied to USB ports)
AC-input power	100-240 V AC
AC-input current rating	1 A
AC-frequency	50/60 Hz
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)
Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%

Table A.3: ECMS2000 User Station Product Specifications (Continued)

Supported Hardware	
Peripherals	PS/2 keyboard and mouse, USB keyboard and mouse, speakers, microphone
Keyboard	Standard 104/105/109 keyboards for PC, Macintosh, and Sun; USB keyboards for PC, Macintosh and Sun; Default keyboard drivers are fully supported for Microsoft Windows, Mac OS, Solaris and Red Hat® Linux
Mouse	2-, 3-, and 5-button; scroll and tilt wheel
Mass Storage Devices	All Mass Storage Class devices that use: SCSI Mass Storage subclass Bulk Only Transfer Protocol
Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz 1280 x 720 @ 60 Hz
Video Standard	DDC version 2B
Color Depth	24 Bit
Audio Standard	PC99
Audio Performance	
High Performance	Line-out: 44.1 kHz over stereo channels at a resolution of 16 bits Microphone: 44.1 kHz over a single channel at a resolution of 16 bits
Medium Performance	Line-out: 8 kHz over stereo channels at a resolution of 16 bits Microphone: 8 kHz over a single channel at a resolution of 16 bits
Target Sync Types (Analog output only)	Separate horizontal and vertical

Table A.3: ECMS2000 User Station Product Specifications (Continued)

Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI

Table A.4: ECMS2000 Transmitter Product Specifications

Network	
Ethernet Standard	Ethernet II
Extension Ports	
Number	1
Connectors	RJ-45
Console Ports	
Number	USB: 2; DVI-I video: 1; audio microphone: 1; audio line-out: 1
Type	USB Type A, DVI-I video
Connectors	USB, male; DVI-I, male; 3.5 mm stereo audio jacks, line-out and mic; 2.5 mm DC power jack
Encryption	
Type	Authenticated SSL
Dimensions	
H x W x D	68 x 21 x 153 mm (2.68 x 0.83 x 6.02 in)
Weight	0.3 Kg (0.66 lb) including cables
Environmental	
Heat Dissipation	22 W/H
Power Consumption	6 W
AC-input power	100-240 VAC
AC-input current rating	1 A
AC-frequency	50/60 Hz
DC-input power	5 V
DC-input current rating	1.1 A
Operating Temperature	0° to 35° Celsius (32° to 95° Fahrenheit)

Table A.4: ECMS2000 Transmitter Product Specifications (Continued)

Storage Temperature	-20° to 60° Celsius (-4° to 140° Fahrenheit)
Transit Temperature	-30° to 60° Celsius (-22° to 140° Fahrenheit)
Operating Humidity	10 to 90% noncondensing
Storage Humidity	5 to 95%
Supported Hardware	
Video Resolution	640 x 350 @ 85 Hz 640 x 480 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 720 x 400 @ 70 Hz, 85 Hz 800 x 600 @ 60 Hz, 72 Hz, 75 Hz, 85 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 85 Hz 1152 x 864 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz The following widescreen resolutions are also supported: 1360 x 768 @ 60 Hz 1280 x 720 @ 50 Hz, 60 Hz
Video Standard	DDC version 2B
Color Depth	24 Bit
Audio Standard	PC99
Audio Performance	
High Performance	Line-out: 44.1 kHz over stereo channels at a resolution of 16 bits Microphone: 44.1 kHz over a single channel at a resolution of 16 bits
Medium Performance	Line-out: 8 kHz over stereo channels at a resolution of 16 bits Microphone: 8 kHz over a single channel at a resolution of 16 bits
Target Sync Types (Analog input only)	Separate horizontal and vertical
EDID table settings	Normal aspect or wide screen resolutions
Safety and EMC Approvals and Markings	UL, FCC, cUL, VCCI

Appendix B: Factory Default Settings

Table B.1: Emerge Digital Extender System Factory Defaults

ECMS2000 and ECMS4000 User Stations	
Name	RX_<MAC address>
IP Address	192.168.13.1
Default Gateway	0.0.0.0
Netmask	255.255.255.0
OSD Hotkey Sequence	**Print Screen**
OSD Inactivity Timer	00 hours 10 minutes
OSD Inactivity Checkbox	Enabled
Session Inactivity Timer	00 hours 10 minutes
Session Inactivity Checkbox	Disabled
Session Retry Time-out	1 second
Audio Performance	Medium
Network Speed	Auto-Negotiate
Password	**password**
Appliance Mode	Extender
Static/DHCP Network Configuration	Static
ECMS2000 and ECMS4000 Transmitters	
Name	TX_<MAC address>
IP Address	192.168.13.2
Default Gateway	0.0.0.0
Netmask	255.255.255.0
Audio Performance	Medium
Network Speed	Auto-Negotiate

Table B.1: Emerge Digital Extender System Factory Defaults (Continued)

ECMS2000 and ECMS4000 Transmitters (continued)	
Password	**password**
Video	DVI - Normal
Video Performance	5
Bandwidth Management	Unlimited
Static/DHCP Network Configuration	Static

Appendix C: 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 on-line service request.
3. Call the Avocent Technical Support location nearest you.

NOTE: Please have the product serial number available when contacting Avocent Technical Support.

Appendix D: Troubleshooting

No power status light on ECMS user station

- Verify that the power supply is plugged in correctly.
- Ensure that the power cable from the Avocent-supplied power supply is securely plugged into the ECMS user station.

No video on monitor attached to ECMS user station

- Verify that the monitor attached to the ECMS user station has power.
- Ensure that the video cable from the monitor is securely plugged in to the correct connector on the ECMS user station.
- Verify that the remote computer is turned on.
- Confirm that a network connection exists between the transmitter and ECMS user station.
- Verify that the address of the target transmitter that is configured in the user station is correct.
- Confirm that the IP address used by the transmitter has not been assigned to a second device on the network.
- Confirm that the IP address used by the ECMS user station has not been assigned to a second device on the network.
- Verify that the transmitter is drawing sufficient power from the USB connections on the remote workstation and that it has booted correctly:
  - If the green LED on the transmitter is on, the transmitter is drawing sufficient power.
  - If the transmitter cannot draw sufficient power from the remote workstation you will need to obtain an external power supply unit for the transmitter from Avocent. If connected through a USB hub, ensure that the hub can supply enough power.
- Verify that the correct video setting has been configured in the transmitter serial menu:
  - If the remote workstation provides DVI-only video, verify that the transmitter serial menu has been configured for DVI. Then restart the remote workstation.
  - If the remote workstation provides VGA-only video, verify that the transmitter serial menu has been configured for VGA. Then restart the remote workstation.
- The transmitter has an internal fan. Verify that the fan is functioning.
- Turn the ECMS user station on, then off again. An informational message should appear on the monitor for a brief moment. If the message does not appear, check the monitor by plugging the video cable from the monitor directly into the remote workstation to verify that the monitor is working and that the remote workstation is generating active video. If this is functioning, check that the display settings for your remote workstation are set no higher than a resolution of 1280 x 1024 at 60 Hz refresh rate. If the monitor does not function correctly, replace it.

- If the transmitter has been power cycled (by unplugging the USB cables), ensure that all other cables are disconnected before reconnecting the transmitter. Ensure that you connect the USB cables first.

No mouse or keyboard operation from peripherals attached to ECMS user station

- Ensure that the mouse and keyboard cables are connected to the correct PS/2 or USB ports on the ECMS user station. Match the connector color codes (green for mouse and purple for keyboard).
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct connectors on the remote workstation.
- If the remote workstation can provide only one USB port for the transmitter:
  - Use an external power supply for the transmitter
  - Ensure that the transmitter USB cable labeled “2” is attached to the available USB port of the remote workstation
- Ensure that the correct keyboard layout is configured on the remote workstation for the keyboard you are using.
- Retest the mouse and keyboard by connecting them directly to the remote workstation and rebooting. If one does not function correctly, replace it.

No audio from speakers attached to ECMS user station

- Ensure that the audio cable is securely plugged into the line-out port of the remote workstation (should be color-coded green).
- Ensure that the speaker cable is securely plugged into the line-out port of the ECMS user station.
- Verify that the audio sample rate has not been set to “off” for either the transmitter or the ECMS user station.
- Ensure that the same audio sample rate has been set for both the transmitter and the ECMS user station.
- Verify that the speakers are turned on.
- Retest the speakers by connecting them directly to the remote workstation. If they do not function correctly, replace them.

Poor sound quality from speakers attached to ECMS user station

- Ensure that the same audio sample rate has been set for both the transmitter and the ECMS user station.

Poor video quality on monitor attached to ECMS user station

- Reset video by pressing <**F11**>.

- Ensure that the video cable from the monitor is securely plugged in to the correct connector on the ECMS user station.
- Check the video quality using a different monitor.

No response from USB mass media device attached to the ECMS user station

- Ensure that the mass media device is connected directly to one of the USB connectors on the ECMS user station. If the mass media device is connected to the ECMS user station via a USB hub, it will not be possible to access it.
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct ports on the remote workstation.
- Verify that the mass media device is functioning correctly by attaching it to the USB port on another computer. If the mass media device is not functioning correctly, replace it.

Slow file transfer rate from or to the USB mass media device

- Check if at least one of the transmitter USB cables is connected to a high speed USB port on the remote computer. The transmitter will operate with Low Speed and Full Speed USB, but the file transfer rate will be slower.

Connection to remote workstation is lost

- Verify that the network cable is securely connected to the RJ-45 connector at the rear of the ECMS user station.
- Verify that the ECMS user station is linked to the network and that it is receiving data.
- Verify that the remote computer is turned on.
- Ensure that both of the USB connectors from the transmitter are securely connected to the correct connectors on the remote workstation.
- Verify that the transmitter is drawing sufficient power from the USB connections on the remote computer and that it has booted correctly:
  - If the green LED on the transmitter is on, the transmitter is drawing sufficient power.
  - If the transmitter cannot draw sufficient power from the remote workstation, obtain an external power supply unit for the transmitter from Avocent.
- The transmitter has an internal fan. Verify that the fan is functioning.
- Ping the transmitter from another PC on the network to ensure it is connected.
- Reset the transmitter.
- Reset the ECMS user station.
- Verify that the Ethernet network is fully operational.

Transmitter disconnected from DHCP server (Extender Mode)

- Attempt to reconnect to DHCP server (new IP address should be visible).

- Return to the Network Configuration Menu on the user station and select the Transmitter IP Address option and press **Enter**.
- Enter new IP address as specified on the DHCP server.

Transmitter disconnected from DHCP server (Desktop Mode)

To connect transmitter to DHCP server (Desktop Mode):

1. In the DM2000 Manager Explorer Window area, select *Units* to add a single unit.
2. Select the product without an IP address.
3. Select *No, the Transmitter does not have an address.*
4. Plug the ECMS2000 transmitter into the network and turn it on.
5. Enter the network settings of the transmitter that you wish to locate.
6. Click *Save* and *Close*.

Appendix E: Login Error Messages

The following table lists error messages that may appear when using the ECMS2000 or ECMS4000 user station.

Table E.1: DM2000 Manager and User Station Initiated Error Messages

DM2000 Manager and User Station Login Error Messages	Description
Login failed User not found	User attempts to log in to the DM2000 Manager. The username has not been added to the internal authentication service of the DM2000 Manager.
Login failed Invalid password	User enters an invalid password.
Login failed User account is disabled	User account has explicitly been disabled by a DM2000 Manager administrator.
Login failed Target device not available	User cannot be connected to their target device. No target devices are available for the user to access.
Login failed User station is not managed by DM2000 Manager	User logs in from a user station that the DM2000 Manager does not manage. Administrator must ensure that the user station is added to the DM2000 Manager before a user can log in from that user station.
Login failed transmitter already in use	Transmitter already in use. A user is attempting to log in to a target workstation; however, the DM2000 Manager already has a record of an active media session involving a different user who is currently using the same transmitter as part of their active media session.
Login failed user station already in use	Receiver (user station) already in use. A user is attempting to log in to a target workstation; however, the DM2000 Manager already has a record of an active media session involving a different user who is currently using the same user station as part of their active media session.
Login failed Cannot send session certificate to user station	Cannot send media session certificate to user station.
Login failed Cannot send session certificate to transmitter	Cannot send media session certificate to transmitter.
Login warning Different appliance release versions	A warning which may be received when a successful connection was made between the user station and transmitter. The warning indicates that the transmitter and user station have different firmware release versions.

Table E.1: DM2000 Manager and User Station Initiated Error Messages (Continued)

DM2000 Manager and User Station Login Error Messages	Description
Login failed Could not contact DM2000 Manager	Cannot contact DM2000 Manager.
Login failed DM2000 Manager not specified	IP address not set for DM2000 Manager.
Login failed Timeout	The user station access to the transmitter has timed out.
Login failed Out of service	This message appears when a login attempt is made while the user station is being upgraded.
Login failed Internal error	This message appears when the login fails but no error text is received from the DM2000 Manager. This should not occur during normal operation.

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