INSTREAMER ®

BARIX INSTREAMER

**Network audio converter
for digital audio streaming in
custom home installations
and commercial applications**

User Manual Version 01.03

For Release 01.05 (3. Dec. 2004)
(Firmware 01.07)

BARIX™
THINK FURTHER

Table of Content

1   Introduction

Congratulations on the purchase of your Barix Instreamer from Barix AG.

What exactly is the Barix Instreamer? The Barix Instreamer is a versatile, network-connected analog and digital audio-to-Ethernet converter for a variety of applications.

This device enables professional home installers to satisfy all customer requests for a distributed audio system.

The Barix Instreamer converts analog and digital audio into MP3 streams and serves the network just like an ordinary Internet radio station.

A Barix Instreamer can be easily managed via a web browser interface using web-connected PCs, web pads, PDAs or other web-enabled devices. With serial and Ethernet control API's the device can be controlled by typical home automation systems.

The Barix Instreamer is perfect for converting several digital and analog sources such as tapes, tuner, cd or minidisc and distributing it over the network.

With an optional stick-on transmitter attached IR enabled devices can be remote controlled via the network connection enabling the user to switch the station on a tuner or select a different song on a cd player without being in the same room as the device.

Connection to audio equipment is made simple by offering stereo RCA analog as well as S/PDIF and coax digital inputs.

Installing the Barix Instreamer is fast and simple due to its unique features - SonicIP and IPzator: after power-up the device will announce its IP address over the headphone output!

The Barix Instreamer supports various control and communication modes. Software developers can easily write audio applications using one of the well documented Ethernet, serial or web based interfaces.

2   Features

- Converts analog or digital audio into stereo or mono MP3 streams.

- 10/100 Mbit Ethernet connection

- Stereo RCA Line in, S/PDIF digital inputs (optical and coax), headphone out

- Controllable via a standard web browser (PC, PDA, Web tablet) or via a serial port

- Infrared out for remote control of attached audio device

- Features SonicIP ® and IPzator ™ technology

- Supports Barix audio synchronization feature (can act as SYNC master)

- Easy integration into existing IT infrastructure

3 Package content
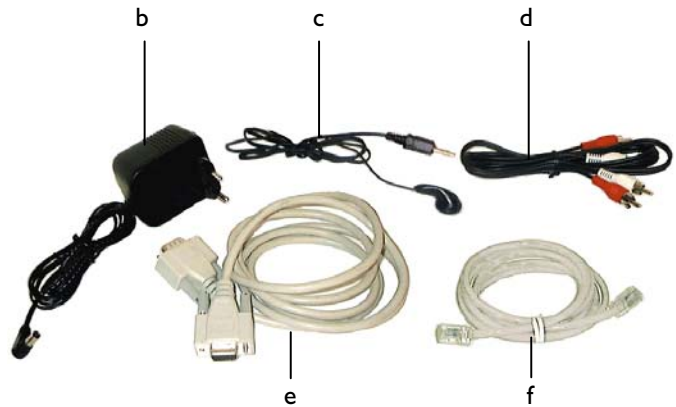
a	Barix Instreamer	b	Power supply
c	Earphone	d	RCA stereo cable
e	Serial cross cable	f	Network cable

4 Getting to know your Barix Instreamer

Rear side

Front side

A   RJ45 for LAN 10/100 Half/Full duplex
This port is for the connection to your network.

B   S/PDIF in coaxial

C   S/PDIF in optical

D   Left Line input RCA

E   Right Line input RCA

F   Power in
ring: Ground, center : +12 VDC

1   Serial port (RS-232)
This port is for a serial connection to your computer.

2   Headphone out

3   Infrared out

4   Red and green LED for status display

5   Reset button
Press this button shortly to reset the Barix Instreamer. If you press it until the red light flashes (about 5 seconds) the device will be reset to factory defaults.

5   Installation

Once the Barix Instreamer is connected to your network, it will automatically receive an IP address from your DHCP server (Internet gateways run usually a DHCP server).
If no DHCP server can be reached, our IPzator function will search the network for a free IP address.
The Barix Instreamer will announce the IP address using SonicIP technology.

5.1   Connecting the Barix Instreamer to your audio equipment

Connecting audio sources is possible by offering three different audio input options:

For connection to an analog audio source, the Barix Instreamer features stereo RCA inputs (D+E). Simply connect the included stereo RCA cable (d) to the audio output of your source device.

For connection to a coaxial digital audio source, the Barix Instreamer features a coaxial S/PDIF input (B).
The Coax cable is not included.

For connection to an optical digital audio source, the Barix Instreamer features an optical S/PDIF input (C).
The optical cable is not included.

5.2   Connecting the Barix Instreamer to your power supply

Plug the included power supply (b) into the power jack (F) of the Barix Instreamer and the other end into the power outlet of the wall.

5.3   Connecting the Barix Instreamer to your network

STEP 1
Plug the included network cable (f) into the network port of the Barix Instreamer (A) and the other end into your hub or switch.

STEP 2
Plug the included earphone (c) into the HP output (2) and put it in your ear.

Get the pen and paper ready to write down the IP address that will be announced in step 5.
The announcement of the IP address is called SonicIP.

STEP 3
Plug the power supply (b) into the power jack (F) of the Barix Instreamer and the other end into the power outlet of the wall.

NOTE
When power cycling the Barix Instreamer we recommend to disconnect/connect the power supply at the wall socket. To prevent electrical overload of the device the power supply should only be plugged into the wall socket with the power supply connected to the Barix Instreamer first.

STEP 4
The Barix Instreamer will now search for a DHCP server to get an IP address and announce this address over the earphone.

Example: 192.168.0.12 (Voice: one nine two dot …)

Make sure you write this IP address down. If no DHCP server is found then our IPzator function will search the network for a free IP address (this could take up to 5 minutes).

NOTE
Your Barix Instreamer is now ready to start working, we recommend, however, that you set a Static IP address so that the IP address will not change every time you power up the Barix Instreamer.
See section 9.1 how to set a Static IP.

6 Controlling the Barix Instreamer

The Barix Instreamer has a local web server built in. You can control the Barix Instreamer from anywhere on your network using a standard web browser (from your PC, PDA or web tablet).

STEP 1

Open your web browser.

STEP 2

Type in the IP address of the Barix Instreamer in the address bar then press Enter
Example: 192.168.0.12

You should now see the device status panel of the Barix Instreamer in the browser window:

F1 User control interface
This frame shows the link to the configuration pages.

F2 Status and control
This frame shows the current device status.
Several links allow control and simulation of serial signals.

F3 Help
This frame shows the help for the available links in the device status page.

6.1 User control interface

BARIX INSTREAMER
A click on the Barix Instreamer logo will bring you to the Barix homepage. (www.barix.com)

A click onto this button will bring you to the device configuration page.

6.2 Status and control

Device status
Shows the current status ("INACTIVE","SENDING").

Input peak value
The number [0..65535] shows the peak value of the encoder (Line or Mic In) for the left and right channel.

SENDING
Click the "SEND" link to start sending.
Click the "STOP" link to stop sending.
The LED next to SENDING has the following meaning:
GREY for not sending, GREEN for sending

CTS IN (RS-232)
Click the "SET" link to simulate CTS beeing activated.
Click the "CLR" link to simulate CTS beeing deactivated.
The value next to "CTS IN" has the following meaning:
GREY for inactivated, GREEN for activated (simulation is not shown!)

RTS OUT (RS-232)
Click the "SET" link to activate RTS.
Click the "CLR" link to deactivate RTS.
The value next to "RTS OUT" has the following meaning:
GREY for inactivated, GREEN for activated

15

7   Device Configuration

To enter the Barix Instreamer device configuration you can log onto its local web server.
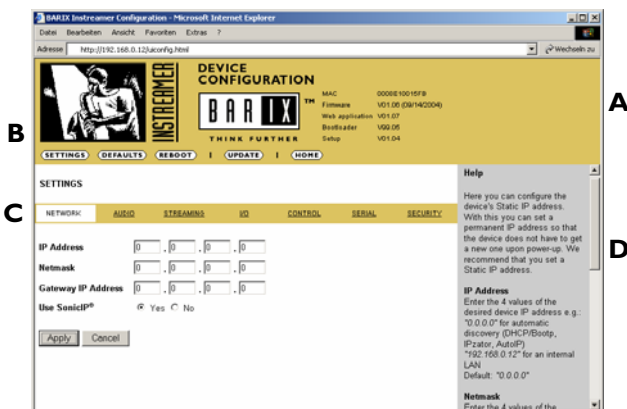
STEP 1
Open your Web Browser

STEP 2
Type in the IP address of the Barix Instreamer and hit enter
Example: 192.168.0.12

STEP 3
Click on the Config button

7.1   Configuration Overview

A   INFO FRAME

This frame shows the Barix Instreamer's MAC address and the installed version of Firmware, Web application, Bootloader and Setup.

B   MENU FRAME

This frame shows the available menu icons.
A click on SETTINGS brings you to the settings page when you are on the DEFAULTS, REBOOT or UPDATE page.
A click on HOME brings you to the device status page.

C   SETTING TABS

This bar shows the available tabs within the settings menu.
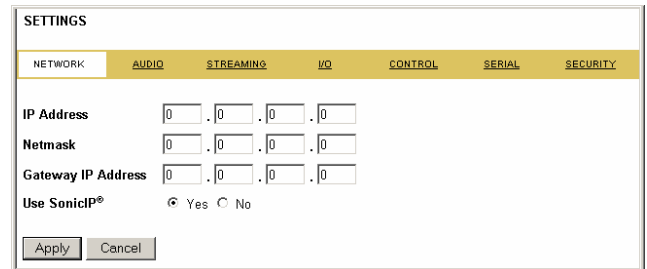
D   HELP FRAME

This frame shows the help to all settings and menus.

7.2   Network settings

Here you can configure the Barix Instreamer's Static IP address.

With this you can set a permanent IP address so that the device does not have to get a new one upon power-up.

We recommend that you set a Static IP address.

IP Address
Enter the 4 values of the desired device IP address e.g.:
•   "0.0.0.0" for automatic discovery
    (in this order: BOOTP, DHCP, IPzator, AutoIP.
    See also section 10.4 Automatic discovery settings.)
•   "192.168.0.12" for an internal LAN

Netmask
Enter the 4 values of the desired Static IP e.g.:
•   "0.0.0.0" for a default Netmask depending on the used
    IP Address.
•   "255.255.255.0" for a C class network

Gateway IP Address
Enter the 4 values of the desired Gateway IP address e.g.:
•   "0.0.0.0" for no Gateway
•   "192.168.0.1" for a Gateway in a LAN

Note: The Gateway has to be set only when connecting to other devices over the WAN (through a router).
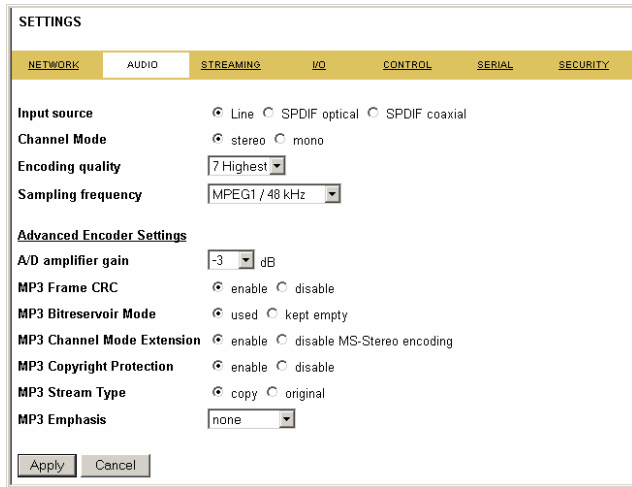
Use SonicIP
If set to "yes", the Barix Instreamer will announce its IP address over the audio output.

To store these settings click on Apply button.
The device will restart with the new settings.

7.3 Audio settings

These settings adjust the audio input and output.

Input source
Choose the desired input source.

Channel Mode
Select between *"stereo"* and *"mono"* input mode.

Encoding Quality
Choose between *"0 lowest"* and *"7 highest"* in steps of 1.
The Encoder Quality table below shows the average bit rate in kbit/s for the quality settings and sampling frequencies in kHz.

Qual.	0	1	2	3	4	5	6	7
44.1	65	68	73	80	90	105	125	140
22.05	35	38	40	45	50	60	75	90

Sampling Frequency
Choose between 6 different settings. From *"MPEG1 / 48 kHz"* down to *"MPEG2 / 16 kHz"*. In case of S/PDIF audio input, MPEG1 is used and the sampling frequency is auto detected.

Advanced Encoder Settings

These Settings are for advanced users only. Detailed information about the Encoder Settings can be found in the datasheet of the Micronas MAS3587 MP3 encoder.

A/D amplifier gain
Choose the desired gain (*"-3"* - *"19.5"* dB) for the A/D amplifier (only for the line input).

MP3 Frame CRC
If set to *"enable"*, the encoder will include the CRC-16 to each MP3 frame.

MP3 Bitreservoir Mode
The Bitreservoir is used to compensate the differences between the predefined frame sizes. If set to *"used"*, the encoder will use the bitreservoir.

MP3 Channel Mode Extension
"Enable" or *"disable"* the MS-Stereo encoding (for stereo only).

MP3 Copyright Protection
"Enable" or *"disable"* the copyright protection bit in the MP3 bitstream.

MP3 Stream Type
Select between a *"copy"* or an *"original"* bitstream in order to set the appropriate bit in the MP3 bitstream.

MP3 Emphasis
Select emphasis *"none"*, *"50/15 us"* or *"CCITT J.17"*.

7.4 Streaming settings

These settings adjust the streaming mode, parameters and destinations.

Own Name
You can enter the name of the Barix Instreamer here. This name will be returned when using the DISCOVER command (see technical documentation) and will be used for the SYNC function in the Barix Exstreamer (see Barix Exstreamer User Manual).

Streaming mode
"send always" will stream always
"send on CTS" will stream if the SEND button (command) is pressed or CTS (Pin 8 Serial connector) is connected to a positive supply (9VDC, Pin 4 Serial connector)
"send on Level" will stream if the incoming audio signal is above the Trigger level

Trigger level
Is only used when Streaming mode is *"on Level"*.
Set to a value between 0 and 32767.
Open the Device status page and look for the Input peak value to get a hint for the trigger value. This page refreshes itself every few seconds.

Pre Trigger Start
Pre Trigger Start can be adjusted to prevent cut offs when audio should be sent earlier than detected. It defines the amount of time that will be streamed before the actual trigger occurred. This feature is most likely used in combination with the send on level feature.

Post Trigger Play
Post Trigger Play can be adjusted to prevent cut offs when audio should be sent longer than detected. It defines the amount of time that the device will continue streaming after the actual trigger has been cleared. This feature is most likey used with the send on level feature.

Buffer Underrun Mode (TCP)
The Buffer Underrun Mode (TCP) defines the action if a TCP stream is slower than the real stream from the encoder. In this case the output streaming buffer underruns and cannot hold older data anymore. The device can then *"disconnect"* the TCP connection or it can *"skip"* the stream directly to the encoder stream without disconnecting TCP.

Streaming Strategy
The Streaming Strategy defines how a packet is build and sent. On *"lowest latency"* the encoded data will be sent directly after the encoding. On *"optimal package"* the packet will be filled up before sending.

UDP Tx Source Port
This setting is only used with a custom software application. Enter the used source port number for a UDP stream (between 0 and 65535). When set to 0 the source port is set to the same port as selected in the destination port (in section Stream to). If destination is set to *"origin source"* the UDP Receiver Port is used.

Sync Port
This parameter should only be changed if you use a firewall and. Enter the used port number for the sync stream (between 0 and 65535). When set to 0 the port is calculated by an algorithm.

Radio Path
Enter a radio path to listen to the transmitted stream of this Barix Instreamer using a device that is able to play MP3 radio stations (also PC software like WinAmp).
The URL to connect is **http://x.x.x.x/p**. Where **x.x.x.x** is the IP address of this device and **/p** is this Radio path.
Example: http://192.168.0.24/xstream
The device can serve up to 6 radio streams.

Stream to
There are up to 8 destinations to stream to. Each one can be directed to a device, or a multi- or broadcast address.

Conn. type
Choose the type of connection:

"not used" for unused destinations
"Internet Radio" for an internet radio station (1 user) (default)
"Raw UDP" for a UDP connection
"Raw TCP" for a TCP connection

IP # # # #
Enter 4 values of the destination IP address e.g.:
"0.0.0.0" for unused destinations (except when the connection type is set to UDP it will be broadcasted e.g. *"192.168.0.255"*)
"0.0.0.0" for connection TCP + port if this device is used as a TCP listener waiting for a connection from a streaming device. (default)
"192.168.0.34" for a directed connection
"192.168.0.255" for a broadcast

Port #
Enter the port number for each destination (between *"0"* and *"65535"*). If this port is set to *"0"* then the default ports are used (Internet Radio *"80"*, TCP *"2020"*, UDP *"3030"*).

Note
The default setting (factory defaults) for the streaming destination # 1 is Raw UDP 0.0.0.0 : 0. This means it is UDP broadcasting on port 3030!

Considerations
The choice of settings to distribute the stream to other devices depends on your environment and desired functionality.

If the stream should be received guaranteed by only a few devices (up to 8) we recommend to use TCP since lost packets are retransmitted automatically.

If the stream is intended to be received by many devices we recommend to use UDP broadcast as long as all devices are on the LAN as broadcast is not be able to pass over a WAN.

If your network infrastructure is capable of multicasting use multicast to reduce the traffic generated by broadcasting.

A mix of all the above is possible as each of the 8 destinations allow the individually choice of the connection type.

SNMP settings
SNMP settings are located in the streaming section and are for advanced users only. Different SNMP traps can be generated depending on the state of the Barix Instreamer. The traps are triggered according to specific audio values as following:

Trap Target IP Address
Enter the IP address of the SNMP trap destination.

Low Audio Level
Define the low audio level for the trap generation. A trap

will be generated as soon as the audio level goes below this value (and the silence timeout is run out).

High Audio Level
Define the high audio level for the trap generation. A trap will be generated as soon as the audio level goes above this value.

Trap Repeat
Define the repeat interval for the SNMP trap sending. The trap will be repeated if the values are still according to the defined trap stages after this repeat time.

Silence Timeout
Define the time that has to run out before a trap is sent when the audio level is below the defined low audio value.

7.5 I/O settings

Configure which command should be issued when the CTS signal on the serial connector is activated (see further below for commands).
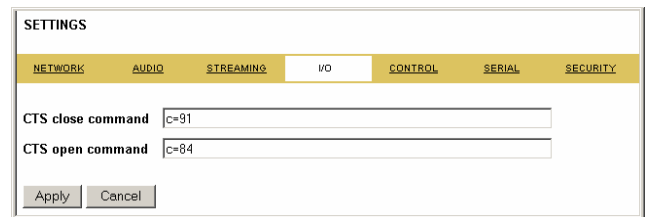
CTS close command
Configures which command should be issued when the CTS signal on the serial connector is activated (see further below for commands).

CTS open command
Configures which command should be issued when the CTS signal on the serial connector is deactivated (see further below for commands).

Commands
Commands can be joined using the "**&**" character and will be executed sequentially.

SENDING MODE
c=84 : Deactivate the sending mode
c=91 : Activate the sending mode

SERIAL
c=89 : Simulate the CTS Signal being activated
c=90 : Simulate the CTS Signal being deactivated
c=60 : Activate the RTS Signal
c=61 : Deactivate the RTS Signal

For further commands refer to the Barix Instreamer technical documentation.

7.6   Control settings

These settings adjust the control port properties.

UDP command port
Defines the port where the device will receive commands via UDP. To disable set this port number to *"0"*.

TCP command port
Defines the port where the device will receive commands via TCP. To disable set this port number to *"0"*.

Web server port
Defines the port where the webserver of the Barix Instreamer can be reached. If set to *"0"* the default HTTP port (80) is used.

7.7   Serial settings

These settings adjust the serial port, local port and serial gateway properties.

Baud rate
Select the serial transmission speed (*"300"* to *"115200"* Baud).

Data bits
Select *"7"* or *"8"* data bits.

Parity
Select *"no"*, *"even"* or *"odd"* parity.

Stop bits
Select *"1"* or *"2"* stop bits.

Flow control
Select the type of flow control: *"none"*, *"Software (XON/XOFF)"* or *"Hardware (RTS/CTS)"*.

Local port
Defines the port on which the serial port can be accessed for serial gateway application. Only when "Local port" is set to *"0"* the serial port can be used as a command interface. If the active serial gateway is enabled and the "Local port" is set to a value then this will be the source port of the TCP connection. On *"0"* a random source port is used.

Destination IP
To have this Barix Instreamer actively establish a serial gateway select the destination IP address to the device where the serial data will be transmitted to (and received from).
Select *"0.0.0.0"* when the serial port is only used local.

Destination port
Defines the port for the active serial gateway function (see destination IP).

Notes
Both settings, "Destination IP" and "Destination port" have to be set to enable the gateway function.

When Serial Gateway is activated the serial port cannot be used as a command interface. This also applies for the device on the other side of the "Serial Gateway".

To establish a "Serial Gateway" between two devices only one device has to be activated. In other words: Only one device will need a Gateway destination IP and Port set.
On power up the active device will connect to the selected device and will try to reconnect automatically in case of a lost connection. This allows you to establish a serial connection between the attached devices on each side over LAN or WAN.

7.8 Security settings

These settings can be used to secure the access to the device on different levels. The status is shown next to each password (set or not set). Access is free for levels without a password (default setting).

Telnet / Serial configuration
Enter up to 7 characters to secure the access to the Telnet and Serial configuration. Without a valid password the network configuration cannot be changed.
Enter 8 characters to erase the current key.

Save configuration
Enter up to 24 characters to secure the saving of the device configuration (Clicking the "Apply" button).

Without a valid password the device configuration cannot be saved! Enter 25 characters to erase the current key.

Save configuration password usage
When the password is set the user has to type in the password in the "Save Config Password field" before hitting the "Apply" button.

Without a valid password a warning will be displayed and the changes don't save.

View configuration
Enter up to 24 characters to secure the viewing of the device configuration (Clicking the "Config" button).
Without a valid password the device configuration cannot be viewed! Enter 25 characters to erase the current key.

View configuration password usage
When the password is set the user clicking on the "Config" button has to type in the password into the password field of the pop up window (the user name does not matter).

Only one user can log in at a time. Further connections will be refused while one user is logged in.

To log out click on the "Logout" link next to the "HOME" icon in the menu bar.

Please hit your browser's Reload button if the "Logout" link is not visible while logged in.

Control / Command
Enter up to 24 characters to secure the access to all control and command interfaces (WEB/CGI, Serial, TCP and UDP). Without a valid password the device cannot be controlled. Enter 25 characters to erase the current key.

Note
This security option should be used very carefully and is intended for advanced users only. Since the CGI commands used in the web interface do not make use of passwords, setting this password would disable any control of the device using a browser.
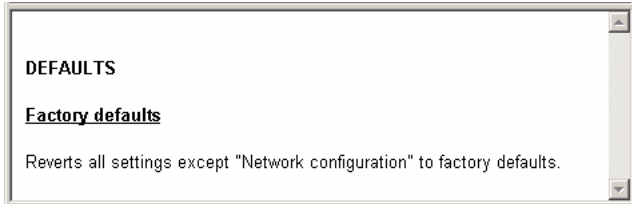
Level 4 to 6 (User)
Enter up to 24 characters to secure the access to customized web pages in 3 levels. Intended for advanced users only, for details see the Barix Instreamer Technical Documentation. Without a valid password these user web pages cannot be viewed. Enter 25 characters to erase the current key.
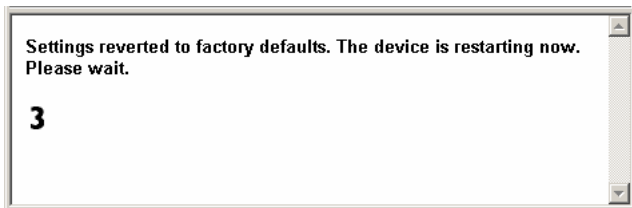
7.9 Reverting to factory defaults

Click on the DEFAULTS button to enter the defaults page.

DEFAULTS

You will see the following screen:

```
DEFAULTS

Factory defaults

Reverts all settings except "Network configuration" to factory defaults.
```

Click on "Factory defaults" to revert all settings except "Network configuration" to factory defaults.
While restarting the device the following screen appears showing a number counting down:

```
Settings reverted to factory defaults. The device is restarting now.
Please wait.

3
```

Upon start up the following screen appears stating the successful reverting to factory defaults:

```
DEFAULTS

The factory defaults are set and the device has restarted successfully.
```
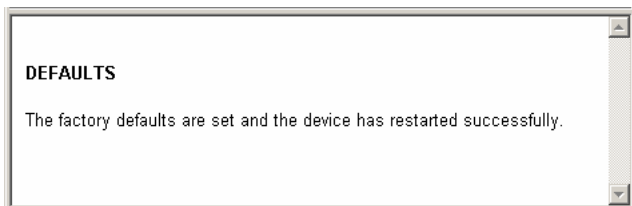
Hard default settings
To revert all settings (including the network settings) to factory defaults the Reset button has to be pressed for about 5 seconds while the Barix Instreamer is powered.

Important note
Use this method if a connection to the Barix Instreamer cannot be established.

This can happen if you have set once a Static IP address, switched off SonicIP and then forgotten the IP address. The Hard default settings sets the IP Address to automatic discovery (0.0.0.0) and enables SonicIP

.If this fails we recommend to download the Barix Instreamer Rescue Kit from www.barix.com.
Unzip the Kit and read "readme1st.txt" for instructions. This Rescue Kit reloads the entire firmware, resets the device to factory default settings using the supplied serial cable and a PC running W2K or XP.

7.10 Rebooting the device

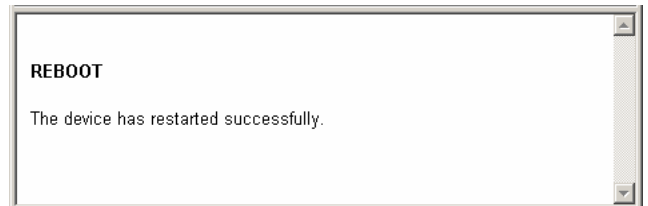Click on the REBOOT button to enter the reboot page.

REBOOT

You will see the following screen:

```
REBOOT

Reboot the device

This lets the device restart.
```
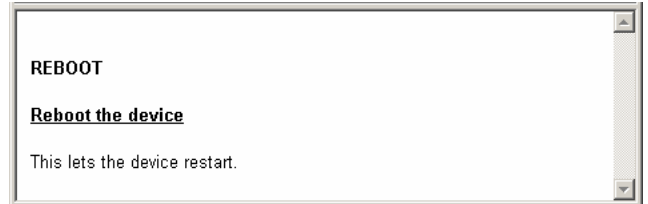
Click "Reboot the device" to restart the Barix Instreamer. While restarting the device the following screen appears showing a number counting down:

```
The device is restarting now. Please wait.

3
```

Upon start up the following screen appears stating the successful restart:

```
REBOOT

The device has restarted successfully.
```

7.11 Updating the device

Barix constantly enhances the capabilities of their products. Therefore we recommend to keep the software on the Barix Instreamer up-to-date.

To download the latest firmware version please visit www.barix.com.

Click on **support**, click on **DOWNLOAD SECTION** and scroll down to the Barix Instreamer.
Download the firmware update package and unpack to a local drive. If no update package is available then the Rescue Kit must be used. Read "readme1st.txt" for instructions. This Rescue Kit reloads the entire firmware, resets the device to factory default settings using the supplied serial cross cable and a PC running W2K or XP.

STEP 1

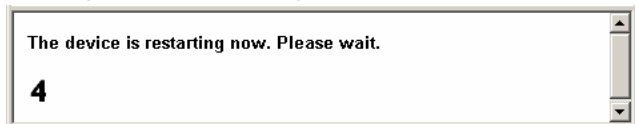Click on the UPDATE button to enter the update page.

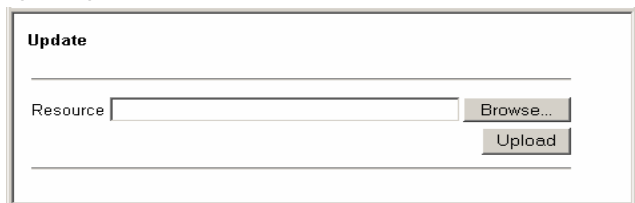You will see the following screen:
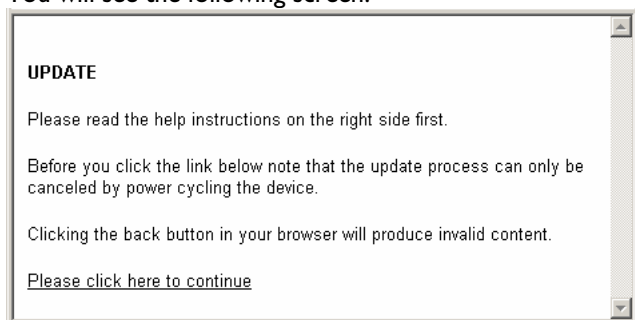
STEP 2
Click on "Please click here to continue" to launch the update process. The device will restart in a special mode called Bootloader and the following screen appears showing a number counting down.

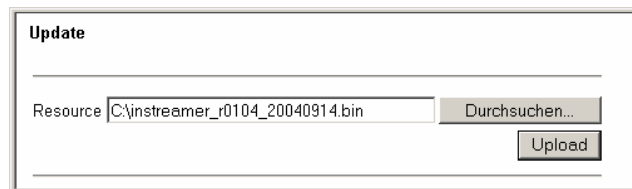Upon start up the following screen appears ready for the update process.

STEP 3
To upload an update click on "Browse..." to locate the file you want to update.

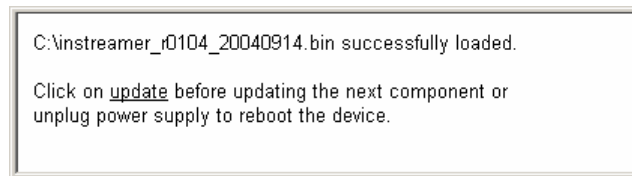The file is named **instreamer_**version_date**.bin**

Example: instreamer_v0104_20040914.bin

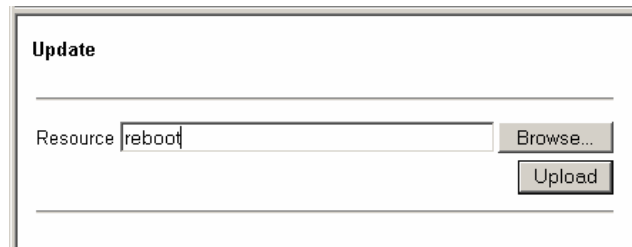If you load the wrong file the device will not work and then the Rescue Kit must be used.

Once selected, click on "Upload".
This process can take a few minutes.

After a successful upload the following window appears:

Click on the update link before updating the next component. Unplug power supply to reboot the device or type "reboot" in the resource field (without the ")

and click on "Upload".

The following screen appears:

STEP 4
Close the browser window. After the device has rebooted open a new browser window to continue.

8   Connect to the Barix Instreamer

There are differnet methods to have the Barix Instreamer connecting to a device (like a Barix Exstreamer) or to a PC application.

8.1   Other device pulls audio from the Barix Instreamer (radio method)

The Barix Instreamer has an integrated livestream web server (like an internet radio server) which can serve streams by standard HTTP. Software applications that are able to play internet radio URLs (like Winamp, see section 9.2) can therefore play from the Barix Instreamer like listening to an internet radio station. For this method the streaming URL can be configured in the "Streaming Settings" (see section 7.4) with the parameter "Radio Path".

Example: http://ip:port/xstream (for direct stream)

For devices that only support to play from a playlist the playlist instreamer.m3u and instreamer.pls can be used:

Example: http://ip:port/instreamer.m3u (for m3u playlist)
Example: http://ip:port/instreamer.pls (for pls playlist)

Since the Barix Exstreamer is also able to play URLs, it can be configured to play from the Barix Instreamer this way as well (with rc.cgi?S=http://… command or with Mode 3 "Streaming Puller").

The number of connections in this mode is limited to 6. If all of these 6 channels are used the webserver of the Barix Instreamer can't be used anymore.

8.2   Barix Instreamer connects to other device by TCP

The Barix Instreamer can also be configured that it connects to another device by TCP (for example connecting to a Barix Exstreamer in Mode 4 "Streaming Receiver"). For this method up to 8 destinations can be configured in the "Streaming Settings" (see section 7.4). The audio is then sent as MP3 stream in these connections.

The number of connections in this mode is limited to 8 (8 destination IP addresses).

8.3   Other device connects to Barix Instreamer by TCP

If the destination device needs to connect by TCP to the Barix Instreamer in order to receive the audio stream, the destination IP in the "Streaming Setting" (see section 7.4) can be left as 0 and the port specifies the according TCP port.

The number of connections for this mode is limited to 8 (8 transmitting ports).

8.4   Barix Instreamer sends audio data by raw UDP

The Barix Instreamer can also send its audio stream by raw UDP (). This can either be done with a specific receiver address (up to 8 of these addresses can be configured in the "Streaming Section") or with broadcast and multicast addresses. Please note that UDP transmission does not guarantee that the sent data will get to the receiver since UDP does not support a secure connection.

The number of connections in this mode is limited to 8 specific destination IP addresses. If broadcast or multicast addresses are used, the number of receivers can be unlimited.

8.5   Mixing Modes

The above Barix Instreamer modes can be mixed as the user needs it. If mixing these modes, the total number of 8 connections hast to be considered. So if all of the allowed 6 radio streams are used, the device can still serve 2 other TCP streams, or one TCP stream plus a UDP stream. If only one radio stream is used, there are 7 remaining streams for TCP or UDP.

9   The "How To" section

9.1   How to set a Static IP address

STEP 1
Open your Web Browser.

STEP 2
Enter the IP address of the Barix Instreamer and press Enter. *Example: 192.168.0.12*

STEP 3
Click on the Configuration button.

CONFIGURATION

STEP 4
Enter an IP address into the 4 IP address fields. At default it is 0.0.0.0 for automatic. You can use the address that was announced by the Barix Instreamer.

STEP 6
In normal operating conditions leave the Netmask as is.

STEP 5
The Gateway can be left at default in normal operating conditions. The Gateway enables the Barix Instreamer to connect to other devices over the Internet / WAN.

STEP 7
Hit the Apply button to save all changes. The Barix Instreamer will reboot and has now a Static IP address.

9.2   How to set the Barix Instreamer for listening using WinAmp

Follow these steps to ensure correct settings in the Barix Instreamer.

STEP 1
Open your web browser

STEP 2
Enter the IP address of the Barix Instreamer and press Enter. *Example: 192.168.0.12*

STEP 3
Click on the Configuration link.

STEP 4
Click on the STREAMING tab in the SETTINGS menu

STEP 5
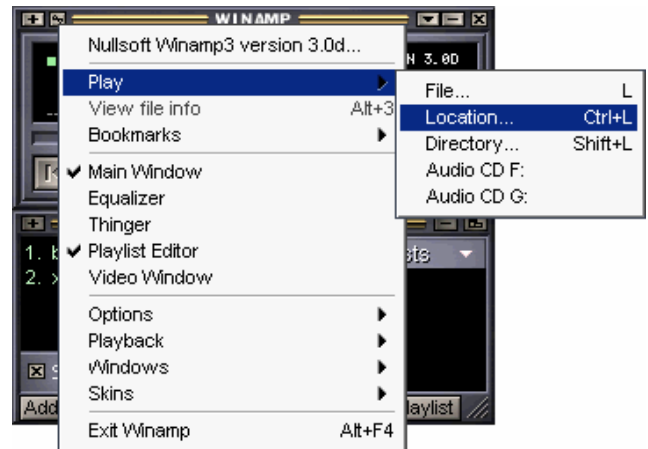Choose "send always" in the Streaming mode field.

STEP 6
Make sure that Radio Path says: **/xstream**
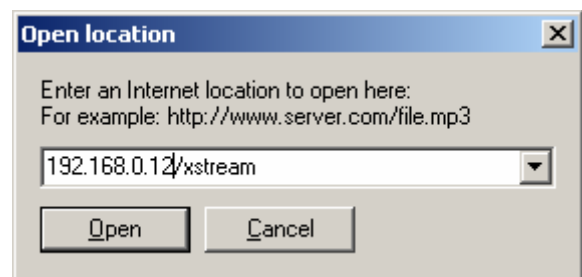
STEP 7
Open WinAmp

STEP 8
Under the file menu choose Play Location (Play URL in version 5) or hit CTRL and L on your keyboard.

STEP 9

Enter the IP address of your Barix Instreamer followed by /xstream.

Example: *192.168.0.12/xstream*

Hit the Open button.

STEP 10
WinAmp will open the stream and buffer it. Wait a few seconds (to fill the buffer) before you can hear the input signal in WinAmp.

NOTE
Once this works you can also try to set the Streaming mode to "send on TALK/CTS". Every time TALK is activated WinAmp will start playing.

Also test the impact of different quality and sampling frequency settings. Play with the Buffer settings in WinAmp to reduce dropouts or minimize delays.

10 Advanced user section

10.1 Network configuration using supplied serial cable

STEP 1
Open a Terminal program.

STEP 2
Go to the settings menu and adjust the following settings: Baud rate 9600 bit/sec, 8 Data Bits, no Parity and 1 Stop Bit.
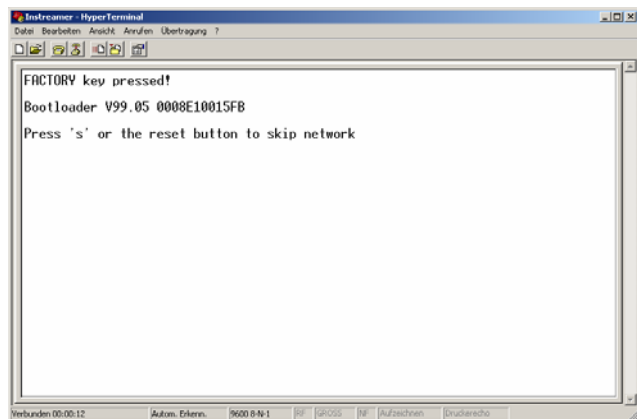
STEP 3
Unplug the power supply of the Barix Instreamer.

STEP 4
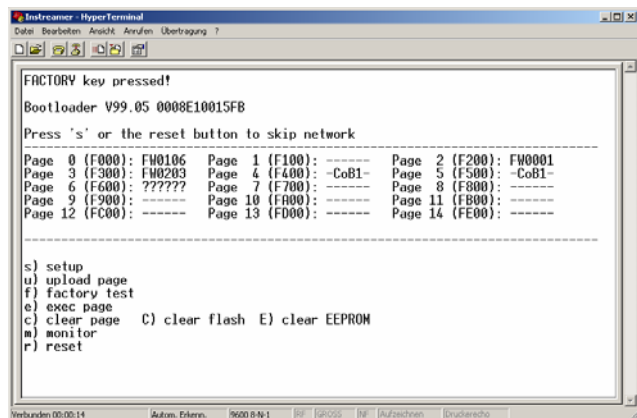Connect the supplied serial cable to your PC's COM port and to the serial port of the Barix Instreamer.

STEP 5
Keep the Reset button pushed and plug in the power supply. Release the Reset button as soon as you see the following screen:
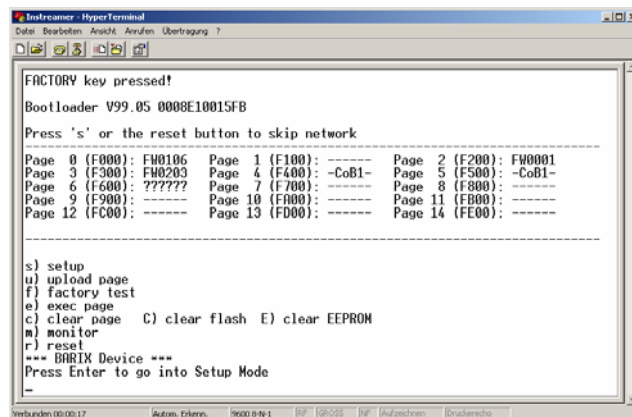

STEP 6
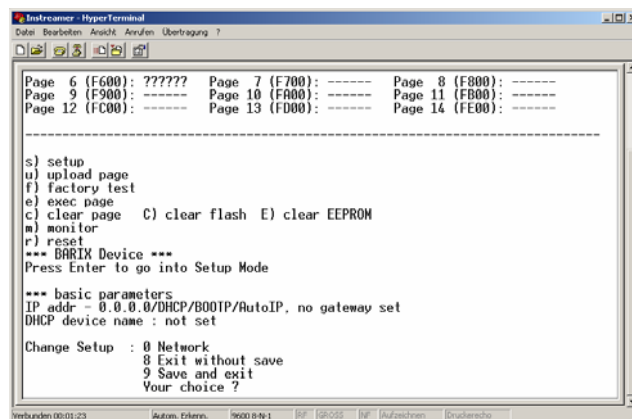Hit <s> to skip network discovery if not connected to a network and the following screen appears:

STEP 7
Hit <s> to get to the Barix Instreamer setup.
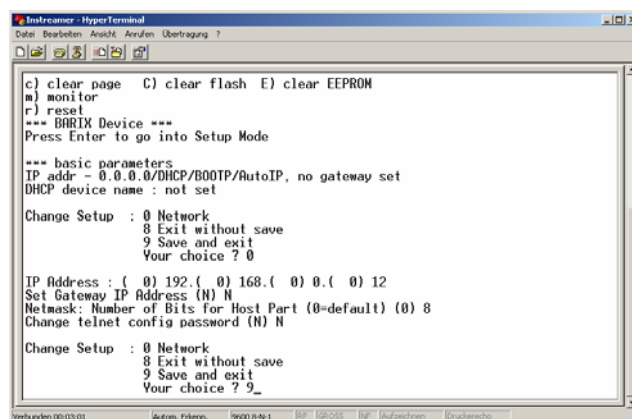

STEP 8
Hit <enter> to enter the Barix Instreamer setup mode.

STEP 9
Type in <0> and hit <enter> to enter the Network configuration. Enter all requested values:

STEP 10
Type in <9> and hit <enter> to save the Network configuration.

10.2 Network configuration using Telnet

STEP 1
Unplug the power supply of the Barix Instreamer.
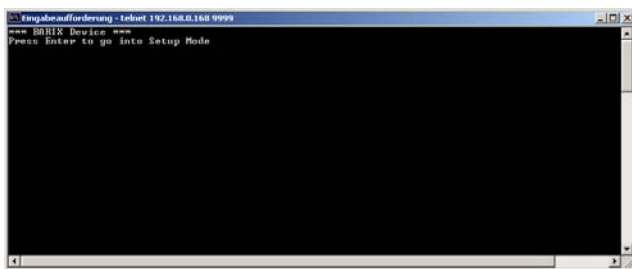
STEP 2
Keep the Reset button pushed and plug in the power supply. Release the Reset button after 5 seconds.

STEP 3
Run a command session. Type telnet with the IP address announced by SonicIP on port 9999.
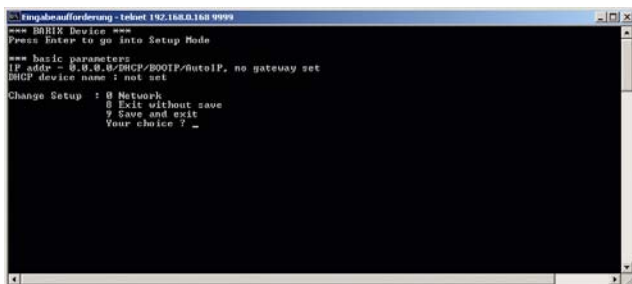*Example: telnet 192.168.0.168 9999*

You will see the following screen:

Hit <enter> to access the Barix Instreamer in the setup mode.

STEP 4
Type in <0> and hit <enter> to enter the Network configuration. Enter all requested values.

STEP 5
Type in <9> and hit <enter> to save the Network configuration.

10.3 Control APIs for serial and Ethernet

For integration of the Barix Instreamer into various control applications and home automation systems, Barix has developed a control API (Application Protocol Interface) for the serial port and Ethernet UDP and TCP control.

Serial Port control API
The serial port on the Barix Instreamer can be used to send control commands from a home automation system and other PC or embedded applications. In the device configuration the serial port can be adjusted to suit your application.

For a detailed list of serial commands refer to the Barix Instreamer Technical Documentation available on the Barix website www.barix.com

Ethernet UDP or TCP control commands
The same control commands used on the serial port can be used as UDP or TCP commands over Ethernet.

For more information and a detailed list of UDP and TCP control commands refer to the Barix Instreamer Technical Documentation available on www.barix.com

10.4 Automatic discovery settings

The automatic discovery functions are not executed if a static IP address is set. To enable automatic discovery but disable certain IP discovery functions set all but the third value to zero. For each function you want to disable add the value from the table below:

- 0.0.1.0   to disable AutoIP
- 0.0.2.0   to disable BOOTP
- 0.0.4.0   to disable DHCP
- 0.0.8.0   to disable IPzator

Example: 0.0.3.0 disables AutoIP and BOOTP
              0.0.11.0 disables all but DHCP

Warning:
0.0.15.0 disables all discovery functions which locks you out unless you reset the device to factory defaults by pressing the reset button for about 5 seconds.

11 FAQ and Troubleshooting

Q: I don't see any status lights on at all.

A: Make sure the power cable is correctly plugged into the unit and make sure the power supply is plugged into the wall.

Q: Red status light is flashing red.

A: Make sure the network cable is plugged into the unit. The status light on the jack indicates if you are connected to the network or not. You can also ping the device to see if it's on your network.

Q: How do I ping the Barix Instreamer to see if it's on my network?

A: You can ping any device on your network by opening a DOS command box.

Type ping and the IP address of the unit to see if you can get a response.

Example: ping 192.168.2.10
The proper response would be to see the message "reply from 192.168.2.10".

If you see the message "request timed out", it means that the Barix Instreamer is not on your network or that you have entered the wrong numbers for the IP address.

Q: When I type in the IP address into the browser I get a "This Page Cannot Be Displayed" Message

A: This means that you cannot connect to the Barix Instreamer. There could be a couple of different reasons. Make sure you are typing in the IP address correctly. Check the cables to make sure the Barix Instreamer is properly connected to the network.

Q: Will the Barix Instreamer work on my operating system?

A: The Barix Instreamer works on virtually any operating system, to control the Barix Instreamer a standard web browser is all you need.

12 Technical specifications

Audio Format:
MP3 from 8 up to 192 kBit VBR (Variable Bit Rate)
Stereo/Mono

Audio Interfaces:
Stereo Line In (RCA 2Vpp max, level)
Headphone Out (3.5 mm Jack, 4.2Vpp max)
S/PDIF In (optical and RCA coaxial)
volume, bass and treble adjustable by browser

Network Interface:
RJ45 10/100 Mbit Ethernet (Auto), TCP/IP,
UDP, ICMP, DHCP, AutoIP, SonicIP®, IPzator™,
Integrated web server for control and configuration

Control Interfaces:
DSub 9pin male, 9600 Baud 8, N, 1

Miscellaneous:
Two LED (red and green) status indicators
Reset/Factory default button

Power requirements:
12 VDC 0.5 A, 230 VAC (EC) or
110 VAC (US) power supply included

Case:
Aluminum, 390 grams
6.5" x 1.5" x 5"
165 mm x 38 mm x 127 mm

Environmental conditions:
Temperature: 32 ~ 104° F / 0 ~ 40° C
Humidity: 0 ~ 70% relative humidity non-condensing

Certifications:
FCC A, CE A

User Interface:
Browser based (integrated web server),
serial port or Ethernet control API for home
automation systems

13 Dictionary

DHCP
Short for Dynamic Host Configuration Protocol, DHCP is a protocol used to assign an IP address to a device connected to a Network.

DOS
Microsoft DOS (Disk Operating System) is a command line user interface. MS-DOS 1.0 was released in 1981 for IBM computers. While MS-DOS is not used commonly today, it still can be accessed from Windows 95, XP, Windows 98 or Windows NT by clicking Start / Run and typing command or CMD in Windows 2000.

IP
Short for Internet Protocol, the IP is an address of a computer or other network device on a network using IP or TCP/IP. Every device on an IP-based network requires an IP address to identify its location or address on the network.
Example: 192.168.2.10

IPzator
Barix IPzator™ technology is designed for the purpose that the Barix Instreamer can create its own IP address according to the network structure in case it can't receive one from your network. If DHCP, AUTO IP or BOOTP fail, IPzator will create an IP address within the subnet and test it. If the address works and is not being used by another device on the network, it will give the address to the Barix Instreamer.

MAC address
Abbreviation for Medium Access Control, a MAC is a unique address number formatted in hexadecimal format and given to each computer and/or network device on a computer network. Because a MAC address is a unique address a computer network will not have the same MAC address assigned to more than one computer or network device.
Example: A1:B2:C3:D4:E5:F6

Netmask
A number used to identify a sub network so that an IP address can be shared on a LAN (Local Area Network). A mask is used to determine what subnet an IP address belongs to. An IP address has two components, the network address and the host address. For example, consider the IP address 150.215.17.009. Assuming this is part of a Class B network, the first two numbers (150.2) represent the Class B network address, and the second two numbers (.017.009) identify a particular host on this network. The Netmask would then be 255.255.0.0

Ping
Ping is a basic Internet program that lets you verify that a particular IP address exists and can accept requests.
Example: ping 192.168.2.10

SonicIP
Barix SonicIP® technology is designed to vocally announce the Barix Instreamer's current IP address. This makes it easier and faster to obtain the necessary network information. To make use of SonicIP plug in the included earphone into RCA audio out, connect the network and plug in the power supply. It will announce the address over the earphones right after power up.

Static IP
A Static IP is a fixed IP address that you assign manually to a device on the network. It remains valid until you disable it.

Telnet
Telnet is a user command and an underlying TCP/IP protocol for accessing remote computers. On the Web, HTTP and FTP protocols allow you to request specific files from remote computers, but not to actually be logged on as a user of that computer. With Telnet, you log on as a regular user with whatever privileges you may have been granted to the specific application and data on that computer.
Example: telnet 192.168.2.10

Barix AG

Seefeldstrasse 303

8008 Zurich

SWITZERLAND

Phone: +41 43 433 22 11

Fax: +41 1 274 2849

Internet

web: www.barix.com

email: sales@barix.com