



ABCL Full-Duplex application

Introduction

The ABCL firmware kit is an optional firmware for the Barix audio devices. The main difference to the standard firmware is, that it can work in full-duplex mode and that the application itself can be modified/changed. That means the existing application can be changed, new features or customized designs or also complete new application can be added.

What is ABCL:

ABCL is the **A**udio **B**ARIX **C**ontrol **L**anguage, it is a simple (like Basic) but very powerful programming language to control BARIX devices like Annunicom, Exstreamer and Instreamer.

ABCL gives access to almost all interfaces of the BARIX devices available on our Audio devices, e.g. Audio, network, serial, USB, LCD display, LED control, IO control and some more.

The ABCL firmware kit contains the complete development tools and environment and also one fully working DEMO application – the “Full-duplex application”.

On the BARIX Homepage some more ABCL DEMO applications are available.

More information to the ABCL programming are available in the BCL programmers manual, this is available for download on:

http://www.barix.com/downloads/ABCL_Kit_Firmware/21/

The same link is containing also the ABCL technical documentation.

Full-duplex application

This application allows to use the Annunicom or Exstreamer500/1000 to communicate in full-duplex mode, speaking and listening to another device at the same time with a minimum delay.

The firmware/application runs also on the BARIX Instreamer and the other BARIX Exstreamer devices, but then not in Full-duplex mode, there it works only uni-directional.

The Full-duplex application supports the following key features :

- audio communication uni-directional and bi-directional (half- and full-duplex)
- audio codecs : G.711 (uLaw / aLaw in 8 / 24 kHz) and PCM 16-bit (8 or 24 kHz)
- audio buffer/delay control for lowest latency
- serial gateway / tunnel over network
- relay activation (if available on the hardware) on received audio stream

How to use the Full-duplex application:

At the first time access the BARIX device's homepage, under settings select the active application. There select "Full-duplex Annunicom (annunfdx)" from the pull-down menu.

If necessary define also valid IP setting for the current network environment and click on the "Apply" button at the bottom of the page (scroll down).

Thereafter the device will save the new setup values and automatically reboot.

The screenshot shows the BARIX BCL web interface in a Windows Internet Explorer browser window. The address bar shows <http://192.168.110.177/>. The page header includes the BARIX logo and system information: MAC: 00:08:E1:00:53:72, Setup: V01.01, Song: V08.17 (Dec 8 2010), Firmware: VB0.35 (12/08/2010), File system: V02.05, Web application: V01.14, Application: annunfdx, Bootloader: V99.19, Application version: V0.22 03.08.2010. The navigation menu includes: SETTINGS, APPLICATION, DEFAULTS, REBOOT, UPDATE, ETHERSOUND.

The main content area is divided into two columns. The left column contains configuration settings, and the right column contains help text for the selected application.

Left Column Settings:

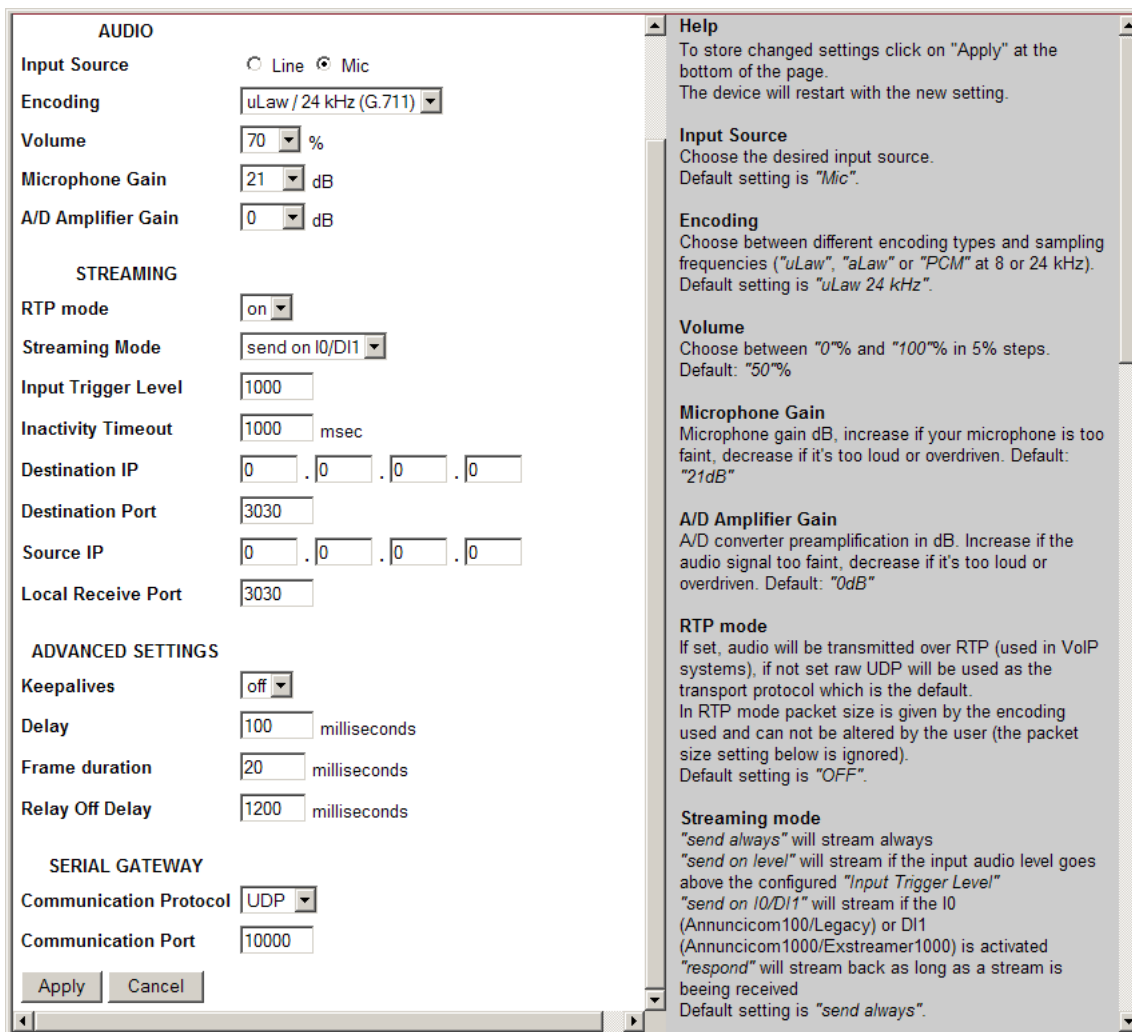
- APPLICATION:** Application: Full-duplex Annunicom (annunfdx)
- NETWORK SETTINGS:**
 - Use SonicIP: Yes No
 - IP Address: [0] . [0] . [0] . [0]
 - Netmask: [0] . [0] . [0] . [0]
 - Gateway IP Address: [0] . [0] . [0] . [0]
 - Primary DNS: [0] . [0] . [0] . [0]
 - Alternative DNS: [0] . [0] . [0] . [0]
 - Syslog Address: [0] . [0] . [0] . [0]
 - DHCP Host Name: []
 - Web Server Port: [80]
- SNMP SETTINGS:**
 - System Name: []
 - System Location: []
 - System Contact: []
- SERIAL 1:**
 - Use Serial 1 For: BCL Application
 - Baud rate: 9600

Right Column Help Text:

- APPLICATION:** Select the desired BCL application you want to run.
- NETWORK SETTINGS:**
 - Use SonicIP:** If set to "yes", the device will announce its IP address over the audio output. Default: "yes"
 - IP Address:** Enter the 4 values of the desired device IP address e.g.: "0.0.0.0" for automatic discovery (DHCP/Bootp, IPzator, AutoIP) "192.168.0.12" for an internal LAN. Default: "0.0.0.0"
 - 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. Default: "255.255.255.0"
 - 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). Default: "0.0.0.0"
 - Primary DNS:** In this field you can give the Exstreamer the desired primary and alternativ DNS IP address to be able to connect to URLs (e.g. www.radio.com). Example: "195.186.1.111" Default: "0.0.0.0"
 - Alternative DNS:** In this field you can give the Exstreamer the desired alternativ

As shown on the picture above, on the left side are the settings and on the right side of the web page is an online help for each setup item.

When the “Full-duplex Annunicom” application is selected (and applied) then the “APPLICATION” button will bring you to the FULL DUPLEX INTERCOM menu (see following screen shot).



Also here is a online help for each setup item available.

For the application setup make sure both sites/devices have configured the same encoding parameter and the same protocol (RTP mode).

If the “Serial Gateway” should be used, then the serial parameters, like baud rate, parity,data bits, stop bits and flow control must be configured on the “SETTINGS” page.

The application can be used for “point to point” communication. In a LAN environment also a broadcast IP address or Multicast IP address is possible, then it can be also used for “point to multi-point” applications, but in this case not more than one device should answer (at the same time).

Supported BARIX RTP payload types:

- | | |
|-----------------|-------------------|
| 0 = uLaw / 8kHz | 97 = uLaw / 24kHz |
| 8 = aLaw / 8kHz | 98 = aLaw / 24kHz |
| 96 = PCM / 8kHz | 99 = PCM / 24 kHz |

When a audio stream is received then the relay will go on for the time of a incoming audio stream, this can be used e.g. To switch a notification light or to turn on an attached amplifier / intercom panel.

Status page:

The status page is also available over the web server.

This page offers information over the device itself and the loaded software, like :

- uptime
- MAC address
- IP address
- hardware type
- firmware and application version
- detected USB devices

