

Annunicom 155

PRODUCT MANUAL

Ruggedized IP Paging, Intercom and VoIP

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Hardware Rev.HW 1.2

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1 Introduction

1.1 About this document

This PRODUCT MANUAL aims at giving insight to detailed technical aspects of the device and complements the information given in the product sheet.

The „Quick Install Guide“ (a printed version is included in the devices package) is contained in this document and followed by chapters to complete the installation.

1.2 Additional documents

As several different applications and different standard firmware packages can be used with the Barix Annunicom 155, the process of loading or updating a software is also covered in this document.

For information about the configuration of the loaded application or firmware please refer to the corresponding software user manual.

1.3 About the Annunicom 155

The Barix Annunicom 155 is a rugged, universal IP Audio device, developed to operate within challenging environmental conditions whether outside or in rolling stock.

1.4 Applications

- Door and help point intercom system
- Security surveillance and alarming
- PA, alarming, and paging
- Help Points, Emergency Intercom in cars, vessels, trains, people movers
- VHF radio control via IP
- Outdoors, SIP based call box/help point
- Digital Message Repeater
- Generic Audio Streaming over IP

1.5 Hardware features

The Barix Annunicom 155 features:

- High quality, multi standard audio encoding and decoding in formats: PCM 16bit linear, PCM 8bit logarithmic (μ Law / aLaw) , MP3 MPEG 1/2 layer 1 and 2
- 2 KB EEprom for configuration storage
- 2 MB Flash memory for application and web server content
- Balanced electret microphone input (mono) with supervised bias power
- Isolated balanced 0dBm Line Output (mono), supervised speaker out (5W @ 8Ohm)
- Two 10/100Mbit Ethernet ports connected internally via switch allowing for daisy chaining
- RS-485 screw terminal block, 300..115200 Baud, 12VDC output (100mA self-resetting fuse)
- 2 supervised digital inputs (dry contact inputs)
- 1 LED driving output (current limited)
- 2 LED device status indicators
- 4 LED network status indicators
- Width 130 mm / 5.12“, Height 108 mm / 4.25“, Depth 38 mm / 1.5“
- Low weight: 460 g / 16.23 oz.
- Low Power consumption: 14 Watt max.
- Power supply from 24 to 48 VDC, internally isolated (1500V)

1.6 Integrated Barix IP Audio Module

The Barix Annunicom 155 houses the Barix IP audio module “IPAM 100”. For technical details on the audio module please refer to the corresponding product sheet and the development specification.

1.7 Available Applications and Firmware packages

The Barix Annunicom 155 comes preloaded with the ABCL application “SIP Client” but can also be loaded with different firmware packages featuring:

- Embedded and robust operating system with fully routable IP stack
- IP standard based protocols (TCP/IP, UDP, HTTP, ICMP, SNMP)
- Supports BootP, DHCP, Auto IP and IPzator
- Integrated web server for configuration, control, update and streaming functions
- Fully documented Application Programming Interface (API)
- Highly customizable User Interface (HTML) with development kit
- Special software features in OEM versions on request

Other ABCL applications as well as standard firmware packages (e.g. Annunicom standard firmware) can be downloaded from the Barix website.

2 Quick Installation Guide

2.1 Introduction

This chapter is a copy of the printed „Quick Install Guide“ which is included in the devices package. It explains the initial installation steps assuming the presence of the Annunicom 155 Accessory Kit.

To complete the installation please read also the following chapters.

2.2 Package contents

- a Annunicom 155
- b Quick Install Guide

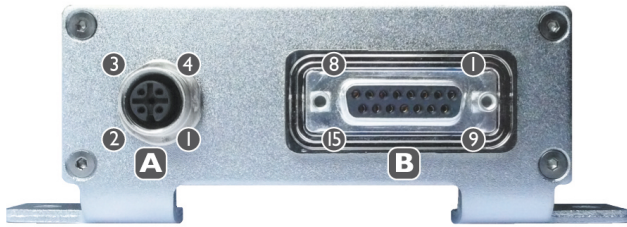
2.3 Recommended Accessory Kit contents (not included in this package)

- c Ethernet Cable 3 m (M12 "D" male / RJ45 male)
- d Power supply (M12 "A" female)
- e* Audio + I/O plug (Shielded D-sub 15 pin male)
- f* RS-485 plug (M12 "A" female)
- * Intended for application-specific cabling

2.4 Support

For support please contact your local dealer or visit www.barix.com.

2.5 Front view



A RS-485 bus (M12 “A” female)

Pin	Description
1	V+ 12V, 100mA max.
2	Ground
3	485 A (not inverted)
4	485 B (inverted)

The DC power output on Pin 1

has a self-resetting fuse rated 100mA.

B Analog & I/O (DSub 15 pin female)

Pin	Description
1	Line Out- [Cold]
2	GroundLine Out+ [Hot]
3	Ground
4	Input 0
5	Input 1
6	LED Out+
7	Not connected
8	Microphone + [Hot]
9	Speaker - [Cold]
10	Speaker + [Hot]
11	Ground
12	Ground
13	Ground
14	Not connected
15	Microphone - [Cold]

2.7 Rear view



C Ethernet switch port 2 (M12 “A” female)

Pin	Description
1	TX +
2	RX +
3	TX -
4	RX -

D Ethernet switch port 1 (M12 “A” female)

Pin	Description
1	TX +
2	RX +
3	TX -
4	RX -

E Power Input (M12 “A” male)

Pin	Description
1	Vin + 24..48VDC
2	Not connected
3	Vin -
4	Not connected

2.6 Top view



F Green and red LEDs for device status display

G Green LED for Link and **yellow LED** for Activity status display of Ethernet switch port 1

H Green LED for Link and **yellow LED** for Activity status display of Ethernet switch port 2

2.8 Installation

STEP 1

Either use a network cable (c) to link the Annunicom (port C or D) to the PC directly, or connect the Annunicom to the PC via your network switch.

STEP 2

- i) If you are ready to connect to audio equipment: Wire the corresponding pins of the “Audio + I/O” plug (e) to a speaker or the Line Out to the input of your mixing console or monitoring device in order to hear the announcement in Step 4i) and plug it into the “Audio + I/O” connector (B).
- ii) If you are not yet ready to connect the device in to your audio equipment, you can still configure the Annunicom. Either download the “Barix Discovery Tool” from www.barix.com for use in Step 4ii) or continue from section [2.10 Setting temporary IP address using the MAC address](#).

STEP 3

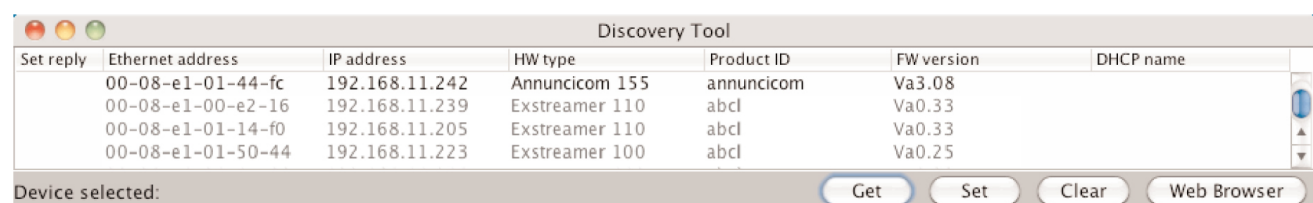
Connect the Power supply (d) to the device’s power input (E) and then to an appropriate electrical outlet.

STEP 4

- i) The Annunicom will now acquire an IP address and announce it over the audio outputs (if no DHCP server is available this can take up to 5 minutes).
- ii) If you did not connect audio, launch the “Barix Discovery Tool” and click the “Get” button to find out which IP address the device has obtained (see picture at the bottom of the page). Make sure that the Ethernet/MAC address matches your device (see label below the Ethernet connectors (C, D) on the rear plate of the device).

Now that you know the IP address proceed to section [2.9 Network configuration by web browser](#).

If you were not able to obtain the device’s current IP address with the previous steps see section [2.11 Troubleshooting](#).



Set reply	Ethernet address	IP address	HW type	Product ID	FW version	DHCP name
	00-08-e1-01-44-fc	192.168.11.242	Annunicom	annunicom	Va3.08	
	00-08-e1-00-e2-16	192.168.11.239	Exstreamer 110	abcl	Va0.33	
	00-08-e1-01-14-f0	192.168.11.205	Exstreamer 110	abcl	Va0.33	
	00-08-e1-01-50-44	192.168.11.223	Exstreamer 100	abcl	Va0.25	

2.9 Network configuration by web browser

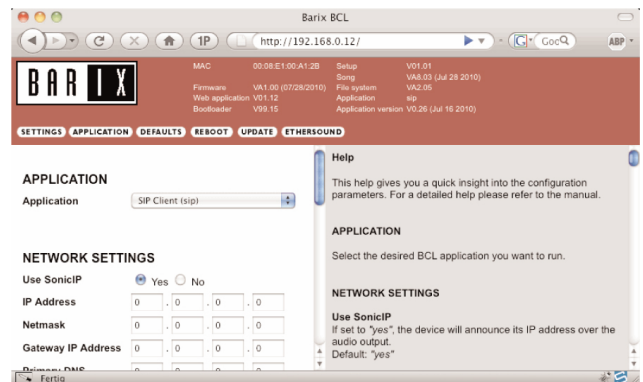
If you need to use static (fixed) network settings follow the steps 1 to 3 otherwise continue at step 4.

STEP 1

Open your web browser.

STEP 2

Enter the IP address that was announced by the Annunicom and press Enter. Example: 192.168.0.12 Click the “SETTINGS” button on the left to see the following page:



STEP 3

Enter the static IP address into the IP address field. The default is “0.0.0.0” for automatic discovery (DHCP).

If you know the values for the other fields enter them, otherwise leave them at default (“0.0.0.0”).

Hit the “Apply” button to save all changes. The device will reboot with the configured IP address.

STEP 4

Skip the next page and read the following chapters to complete the installation.

2.10 Setting temporary IP address using the MAC address

This procedure will work only in a local network. After this procedure the temporary IP will be active only until restart/reboot. After a restart the procedure has to be repeated.

STEP 1

Either use a network cable to link the Annunicom and the PC directly, or connect the Annunicom to the PC via your network switch and power the device. Make sure that you have a valid static IP address configured on your PC (e.g. 192.168.0.2)

STEP 2

Windows : For a command window, click on "Start", click on "Run..", in the "Open" field type cmd , click on "OK". OSX / Linux : Open a terminal window.

STEP 3

Please proceed to step 4 if you linked the PC directly to the device in step 1. To ensure that you use a free IP address (not already used by another device in the network) please use the Ping command. To verify availability in this example we assume the PC to have the IP address "192.168.0.2" and want to check if "192.168.0.6" is free.

Type **ping 192.168.0.6** and hit the "Enter" key. You should get no reply which gives you reasonable assertion that the "pinged" IP is available.

STEP 4

Look for the Annunicom's MAC address printed on a label placed below the Ethernet ports (12 hex digits, separated by a hyphen every 2 digits). Type into the windows command window

```
arp -s 192.168.0.6 00-08-E1-00-B1-77
```

or on a OSX or Linux system type into the terminal

```
arp -s 192.168.0.6 00:08:E1:00:B1:77
```

and hit the "Enter" key (replace the digits according to your devices MAC address). You must have administrative rights to be able to do so (sudo on OSX / Linux).

STEP 5

Now we have to make the Annunicom listen to the IP address "192.168.0.6" using the Telnet command. To do so type into the command window

```
telnet 192.168.0.6 1 and hit the "Enter" key (the number "one" must be there for this command to work correctly !!!). The Annunicom will immediately refuse the connection on port 1, but will be available for browser access as long as the device stays powered.
```

STEP 6

To check if the Annunicom is responding you can use the ping command again. To do so type ping 192.168.0.6 and hit the "Enter" key. If you do get a reply the IP address 192.168.0.6 can be used to access the Annunicom using a web browser. Please go back to section [2.9 Network configuration by web browser](#) to configure a static IP address.

If you do get "request timed out" then please repeat step 5 carefully (you most likely mistyped the telnet command) or repeat the entire procedure.

If the ARP method does not work for you, refer to the user manual for further methods.

2.11 Troubleshooting

If the status LEDs (F) stay dark check the power cabling (installation step 3).

Check if the green LINK LED (G or H) is lit, if it is not then check your cabling (network port C or D).

Note: Acquiring an IP address can take up to 5 minutes.

3 Hardware

3.1 Introduction

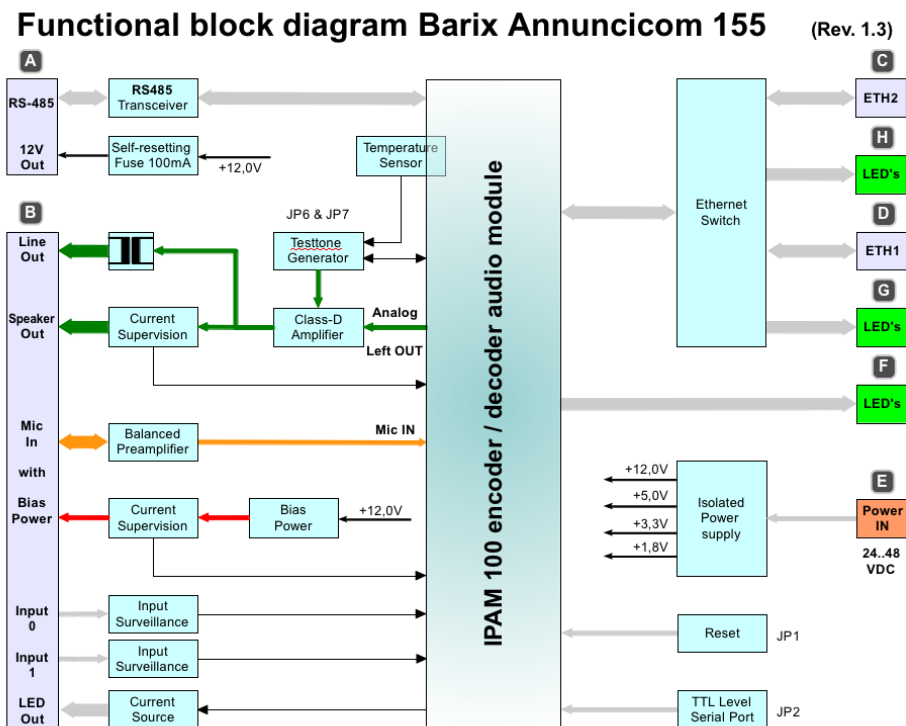
The Barix Annunicom 155 consists of a motherboard with connectors and peripheral circuits supporting the embedded IP audio module “IPAM 100” which is used for encoding and decoding audio. Besides the audio processor the IPAM 100 contains the CPU, RAM, Flash, EEPROM, network, serial and discrete I/O circuits. For further details please refer to the IPAM 100's product sheet and development specification.

In this chapter we will explain the functional blocks using the below block diagram starting on the top left and working down each interface to the point where it is connected to the IP audio module. We then do the same from the top right corner.

At the same time you will find for each connector informations on how to wire the Barix Annunicom 155 to external components. We will explain the wiring using the wiring diagram on the next page.

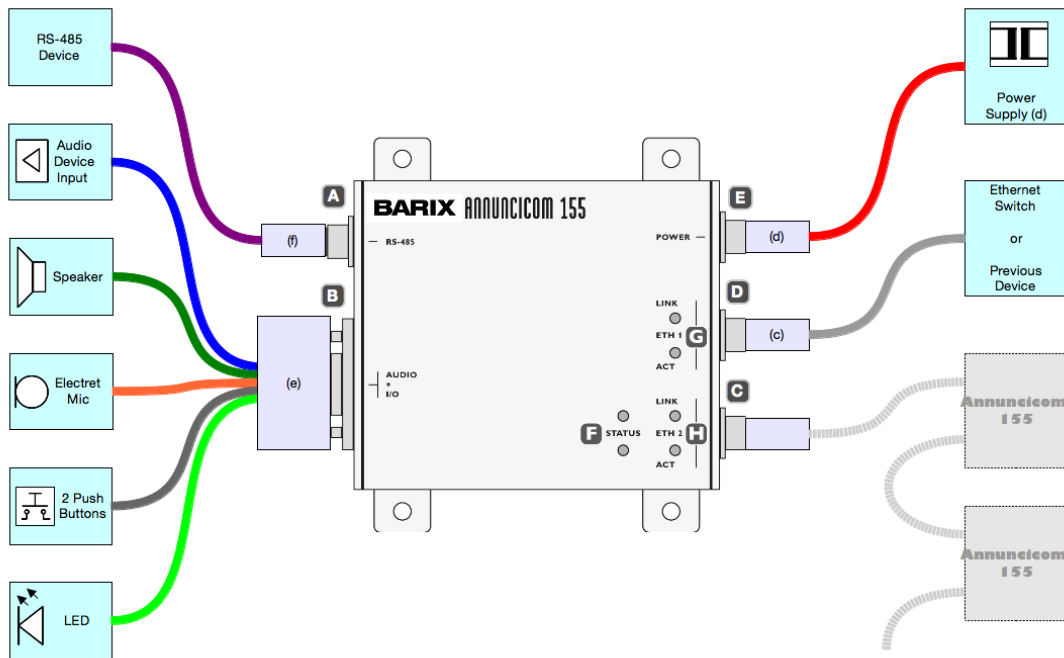
The labeling of connectors **A** to **E** refer to the previous chapter [2 Quick Installation Guide](#). Same goes for the parts included in the Annunicom 155 Accessory Kit which are mentioned including indexing letters in parenthesis.

3.2 Functional block diagram



3.3 Wiring Diagram

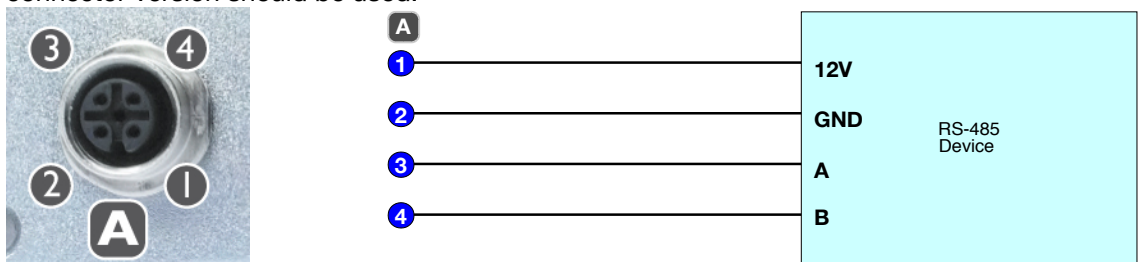
Wiring diagram Barix Annunicom 155 (Rev. 1.3)



3.4 RS-485 Serial Interface

The female M12 “A-Coded” socket **A** is connected through a standard RS-485 serial interface transceiver with the IP Audio module carrying 12 VDC supply (self resetting fuse 100mA) and Ground intended for powering an external device consuming less than 1.2 Watts.

To connect to an external RS-485 device or bus a male M12 “A-Coded” connector is needed. A connector with screw terminals is included in the Accessory Kit (f) and intended for evaluation purposes only. For installation in demanding environments an appropriate M12 connector version should be used.



3.5 Audio & I/O Interfaces

Panel Interface

The female Sub-D 15 pin connector **B** carries all audio and I/O signal on several pins explained in the following sections.

The connector **B** can be connected to external audio and I/O components like an intercom panel using a male DSub 15 pin plug.

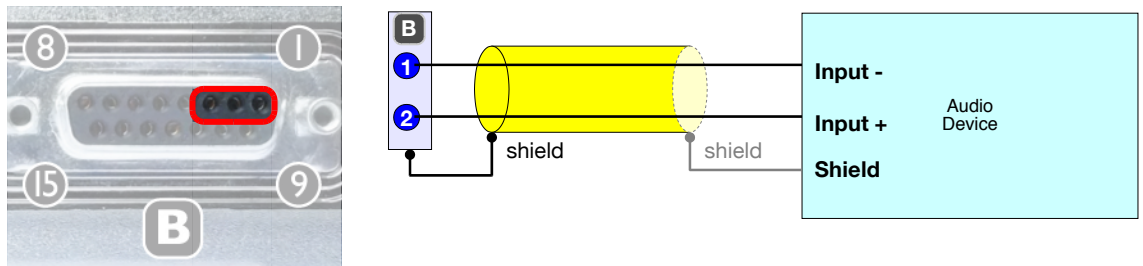
A plug with soldering leads is included in the Accessory Kit (e) and intended for evaluation purposes only (e.g. not waterproof). For installation in demanding environments a appropriate version (IP65 waterproof) should be used.

Line Output

Two pins for a mono 0 dBm Line Out are connected via an isolating transformer to the D-class amplifier output.

With a full-scale signal the output (impedance: 40..45 Ohm) can drive up to 10dBm into a 600 Ohms load or 12dBu when unloaded.

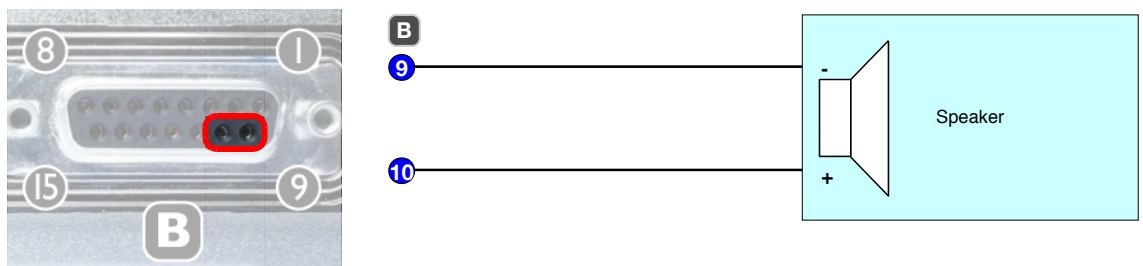
When using a shielded cable make sure to connect the shield only on one side (either on the Annunicom 155 Sub-D plug case or the Audio device's shield) to prevent ground loop issues.



Speaker Output

Two pins, intended for a 8 Ohm speaker, are connected directly to the D-class amplifier and are both supervised to detect a cable break or a short circuit.

To achieve the highest sound power possible (5 Watt RMS) use an 8 Ohm speaker. A reasonable performance can be achieved with an impedance ranging from 4 to 32 Ohms.



Test Tone Generator

The input of the amplifier is connected to a micro controller functioning as a test tone generator and to the Left channel output of the IPAM 100. The generator is used to generate a 11 Herz tone used for the speaker supervision.

The internal jumper pads JP6 and JP7 are intended for use in production only.

Temperature Sensor

A temperature sensor is placed underneath the IPAM and is connected to the micro controller allowing for measurement of the device's inside temperature in the range of -55 to 116° Celsius (-67 to 240° F) with a precision better than +/- 1.5° C (+/- 2.7° F) and a resolution of 0.92° C (1.656° F) as the temperature is converted to an 8 bit signed value.

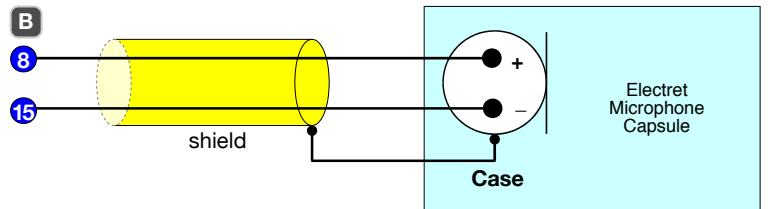
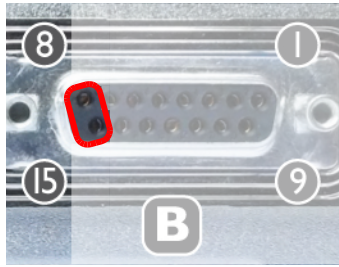
Electret Microphone Input

Two pins are available to attach a balanced electret microphone which is powered by a supervised bias supply. The signal is fed to the mic input of the IPAM 100.

The Bias voltage provided by the device can be up to 4 Volts and will vary depending on the current pulled. The current is limited to 2mA max.

To ensure proper function select a microphone capsule which is rated between 2.5 and 4 Volts for the minimum Bias voltage while the upper Bias voltage is at least 4 Volts.

Use the standard approach of isolation, both electrical and mechanical, to prevent noise injection and feedback (from speaker).

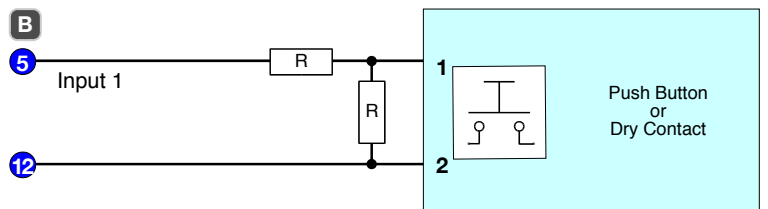
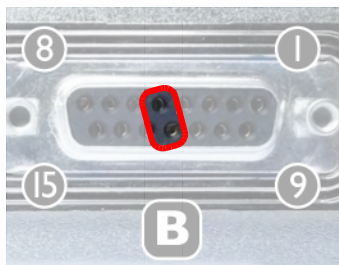
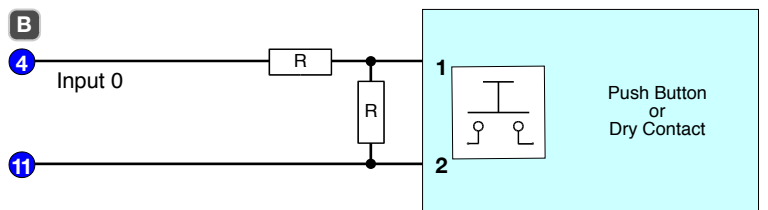
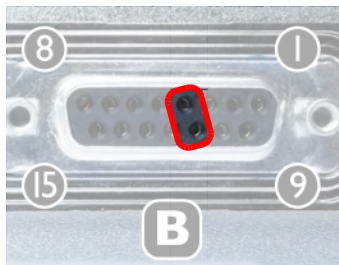


Supervised Inputs

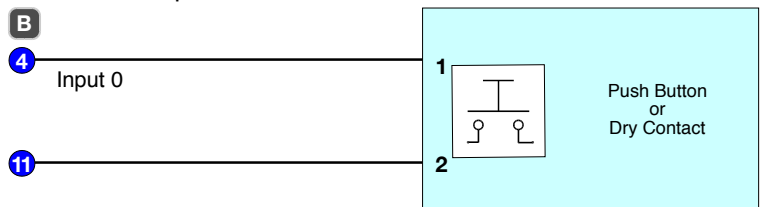
Two pins provide two supervised digital inputs intended for attaching push buttons or dry contacts. The supervision allows for detection of four states:

“connected & contact open“, “connected & contact closed“, “disconnected” and “shorted”

In order to use the supervision two 10 KOhm resistors have to be wired per button or contact. One resistor has to be wired in series close to the button or contact and one resistor must be wired across the button or contact.



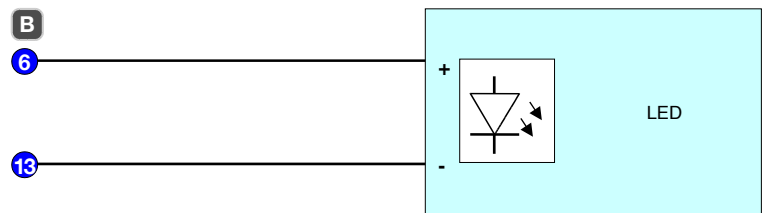
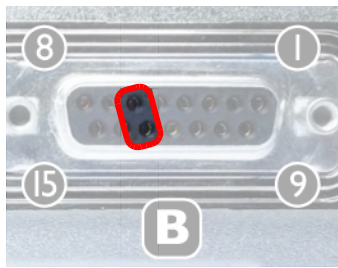
If you do not need the supervision you can omit the resistors (see wiring below) but you will detect only the states “disconnected” for an open contact and “shorted” for a closed contact.



LED Driver Output

One pin carries a current source intended for connecting an external LED.

The current is limited to nominal 20 mA. The output voltage will vary depending on the current pulled but will not rise higher than 10 Volts (DC).



3.6 Network Interfaces

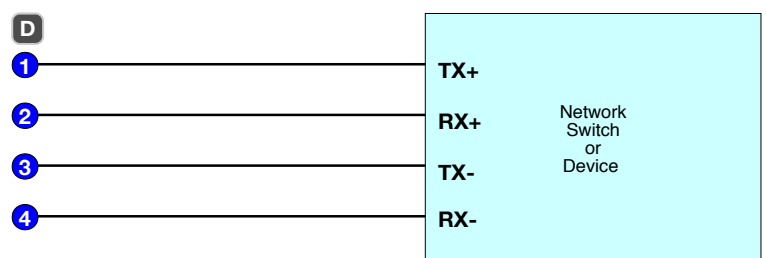
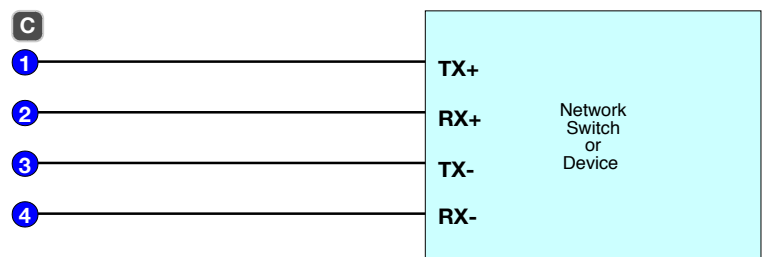
Ethernet Switch Ports

The connectors **C** and **D** are female M12 “D-Coded” sockets connected through Ethernet magnetics circuits to an internal network switch circuit allowing for daisy chaining.

The switch circuit is then connected to the IP Audio Module's secondary network input (MII) which is an 10/100 Mbit, full / half duplex, auto negotiation Ethernet interface supporting TCP/IP, UDP, RTP, DHCP and SNMP protocols and providing Barix AutoIP and IPzator features.

Supporting automatic MDI/MDI-X sensing allows for using a straight network cable (c) instead of a cross over network cable when connecting either of the ports to a PC's Ethernet port directly.

The network cable (c) included in the Accessory Kit (e) is intended for evaluation purposes only. As one side is featuring a RJ-45 plug the use is limited to connect the device to a PC or switch. For the evaluation of device daisy-chaining, a cable featuring M12 plugs on both sides must be fabricated or purchased.



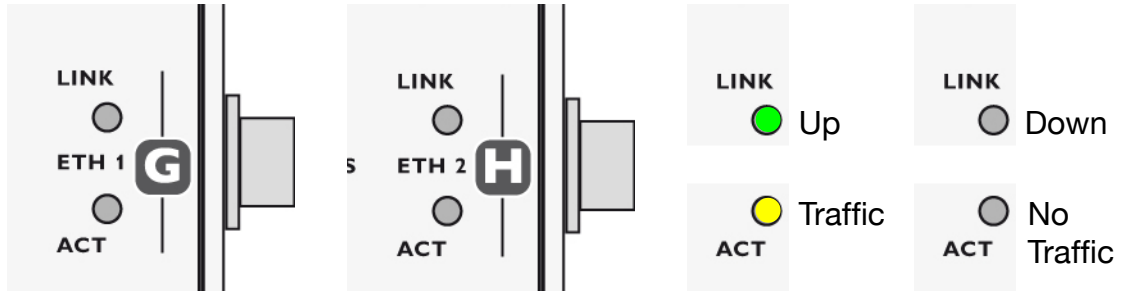
Ethernet Port's Status LEDs

Each port features status LEDs (**G** and **H**).

The green LED shows the ports link status. On when the link is up, off when the link is down.

The yellow LED shows the ports network activity. On when any traffic* is seen on that port, being it incoming or outgoing traffic. The yellow LED is off when there is no traffic on that port.

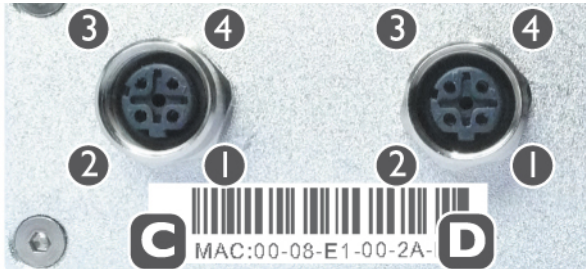
* **Note:** This traffic could be generated by this device (outgoing), traffic not addressed to this device but to any other device in the network (especially when daisy-chaining) or broadcasted traffic (both incoming traffic but passed on) as well as traffic addressed to this device!



MAC Address

The MAC address of the device is printed on the label placed centered below the two Ethernet connectors **C** and **D**.

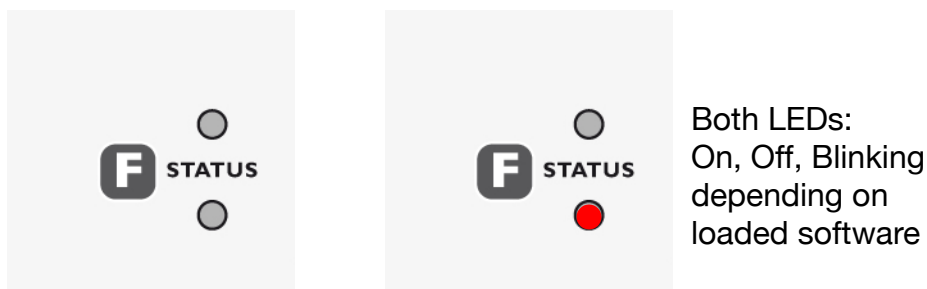
Two additional MAC address stickers come with the device, one intended for placing on the top of the device before mounting and cabling and one for documentation purposes.



3.7 Device Status LEDs

The green and red LEDs **F** are used to signal the current status of the device. For a detailed description of the different LED states please refer to the corresponding software manual.

The green and red device status LEDs are directly connected to the IP Audio Module.

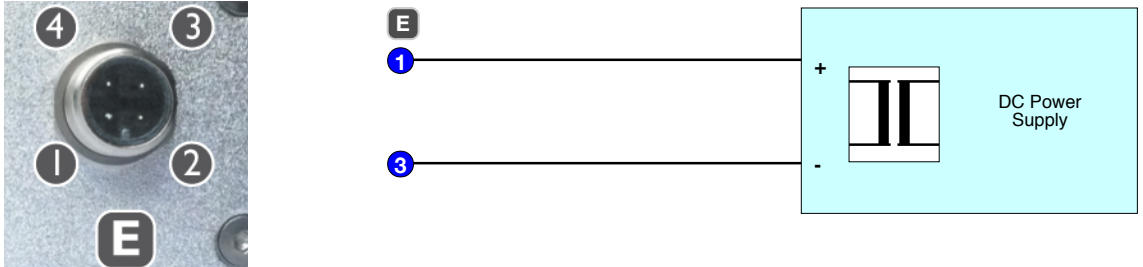


3.8 Power Supply Input

The male M12 “A-Coded” connector **E** can be used to connect a power supply (d) with a voltage in the range of 24 to 48 Volts DC.

This input is then fed into several power circuits to provide all internally needed voltages.

The overall consumption is rated 14 Watts max.



3.9 Internal Software Reset Header

An internal 2 pin header (JP1) is directly connected to “software reset“ input of the IP Audio Module. Intended for use in production only.

3.10 Internal Serial Interface

An internal 4pin header (JP2) is directly connected to the TTL-level RS-232 serial interface of the IP Audio module and also carrying 5V and Ground. Intended for use in production only.

4 Rebooting the device

4.1 Using a web browser

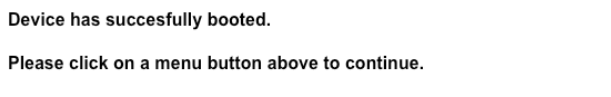
To reboot the Annunicom 155 click the link “REBOOT” in the “Device Configuration” page.



Click on the link “Reboot”.



After approx. 5 seconds the following will be displayed.



4.2 Sending a Reboot Command

The firmware supports the rebooting of the device by sending a “REBOOT” API command. The command itself is “c=99” and can be transmitted using one of three API interfaces: CGI , TCP and UDP as explained below.

CGI Interface

Type in the browsers URL field the IP of the device followed by “/rc.cgi?c=99” and hit the enter key to submit the command. The device will reboot immediately. This command uses the HTTP web server port (default: 80) . Supply the correct port number if you change this setting.

TCP Interface

Send the command “c=99” followed by a „CR“ (Carriage Return) character in a TCP packet to the device. The device will reboot immediately. This command uses the TCP command port which is disabled by default (default: 0). Enable the command port first and send the packet to the port number you have set.

UDP Interface

Send the command “c=99” followed by a „CR“ (Carriage Return) character in a UDP packet to the device. The device will reboot immediately. This command uses the UDP command port which is disabled by default (default: 0). Enable the command port first and send the packet to the port number you have set.

4.3 Power-cycling the device

To reboot the Annunicom 155 the voltage on the power supply connector **E** has to drop for approximately one second before coming up again.

4.4 Using a jumper on reset pin header “JP1”

The following method is only for production or for OEM customers which work on board level.

To reboot the device the reset pin header “JP1” can be shorted for a brief moment using a jumper.

5 Updating the device

5.1 Introduction

Barix preloads all devices with firmware which is current at the day of production. Barix constantly enhances the capabilities and functions and recommends to keep the firmware on the devices up-to-date.

The Annunicom 155 features the “Update over network” method to update the firmware using a web browser.

Warning

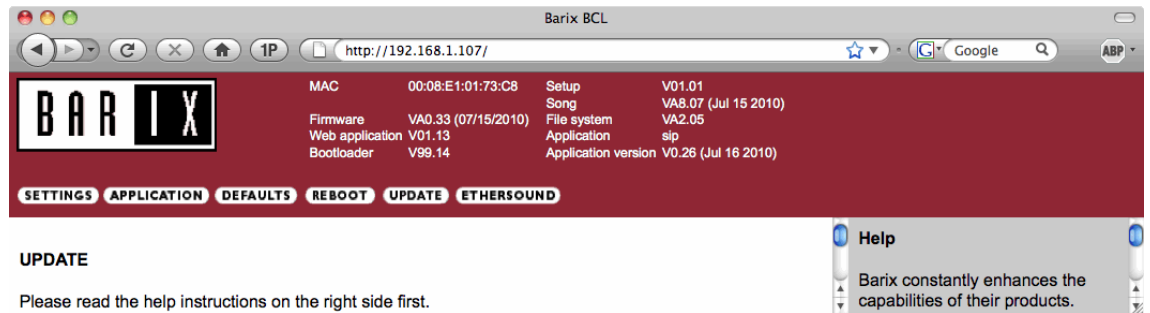
If the network update is interrupted during the process (power or network loss) the device might become dysfunctional or even unreachable.

The only other remedy is to ship the device back for reloading the devices firmware and reverting settings to factory defaults.

Please keep that in mind when planning a remote “Update over network”.

5.2 Checking the Current Version

To find out which version is currently installed check the informations next to the Barix logo on the devices main web page using a standard browser.



Version information

“Firmware” shows the version and the release date of the loaded firmware.

“Web application” shows the version and the release date of the Web User Interface.

“Bootloader” shows the version of the boot loader firmware.

“Setup” shows the version of the setup table in the configuration EEPROM.

“Song” shows the version and the release date of the audio support module.

“File system” shows the version of the File system module.

“Application” shows the name of the loaded ABCL application.

“Application version” shows the version and the release date of the loaded ABCL application.

5.3 Downloading the latest firmware

Introduction

Barix ships the Annunicom 155 preloaded with the ABCL application “SIP Client”. Depending on your needs or your usage of the device an other ABCL application or the Annunicom Standard Firmware might be the right choice. Follow one of the next two sections depending on your choice.

Standard Firmware

To download a firmware version please visit www.barix.com.

In the menu on the left side click on “**downloads**”

In the center column click on “**Annunicom Standard Firmware**” in the section “**Standard Firmware**”.

In the section “**Firmware Update Kits**” verify if the version of the “**Annunicom FW Kit**” is higher then the currently loaded (see version information in previous section). If there is a newer version click on the link to download it. Save the ZIP file and unpack it to a local drive.

In the section “**Firmware Documentation**” click on the release note and the user manual with the same versions as the “**Annunicom FW Kit**” that you downloaded in previous step and read carefully before continuing with an upload to the device.

ABCL Firmware Applications

To download a firmware version please visit www.barix.com.

In the menu on the left side click on “**downloads**”

In the the center column under section “**Special Applications**” click on “**ABCL Applications (overview)**” to get an overview or click on of the links below the overview to choose an application directly.

Click the according link to download the ZIP file as well as the accompanying documents like the release notes and the user manual. Save the ZIP file and unpack it to a local drive. Read carefully the release notes and the user manual before continuing with an upload to the device.

5.4 Web Update Procedure

Calculate approximately 2 minutes to complete the “Web Update” procedure.

STEP 1

Open your web browser, type in the IP address of the Barix device and press Enter.
Example: “192.168.0.12”

STEP 2

If you see an **UPDATE** button continue with the next step else click the **CONFIGURATION** button.

STEP 3

Click on the **UPDATE** button to enter the update page. You will see the following screen:

Barix BCL

http://192.168.1.107/

MAC	00:08:E1:01:73:C8	Setup	V01.01
Firmware	VA0.33 (07/15/2010)	Song	VA8.07 (Jul 15 2010)
Web application	V01.13	File system	VA2.05
Bootloader	V99.14	Application	sip
		Application version	V0.28 (Jul 16 2010)

SETTINGS APPLICATION DEFAULTS REBOOT UPDATE ETHERSOUND

UPDATE

Please read the help instructions on the right side first.

Before you click the link below note that the update process can only be canceled by power cycling the device.

Clicking the back button in your browser will produce invalid content.

[Please click here to continue](#)

Help

Barix constantly enhances the capabilities of their products. Therefore we recommend to keep the software on the device up-to-date. To download the latest firmware version please visit www.barix.com.

Download the firmware update package and unpack to a local drive.

Udatatna files

STEP 4

Click on "Please click here to continue" to launch the update process. The device will restart in a special mode called "Boot loader" and the following screen appears showing a number counting down from 4 to 0.

The device is restarting now. Please wait.

2

Please click [here](#) after the countdown if your browser doesn't support forwarding.

Upon start up the following screen appears:

Update Barix Bootloader V99.13 Jun 26 2009

Resource

[Advanced Update](#)

STEP 5

Click on "Browse..." to select the file you want to update. The file is named "**compound.bin**" located in the folder "**update_rescue**". Select the file and click on the "Open" button.

STEP 6

Update Barix Bootloader V99.13 Jun 26 2009

Resource

[Advanced Update](#)

Click on "Upload" to start the upload process which will take approximately 2 minutes. After a successful upload the following window appears:

compound.bin successfully loaded.

Click on [update](#) before updating the next component or unplug the power supply to reboot the device.

STEP 7

Click on the update link and then click on the "Reboot" button in the following window. The following screen appears:

rebooting...

Click [here](#) to reload the main page.

STEP 8

After the device has rebooted, which takes a few seconds, click on the “here” link to reload the main page.

The device is now ready for configuration according to your needs.

Please read the according User Manual for informations on the configuration.

Note on Factory Defaults

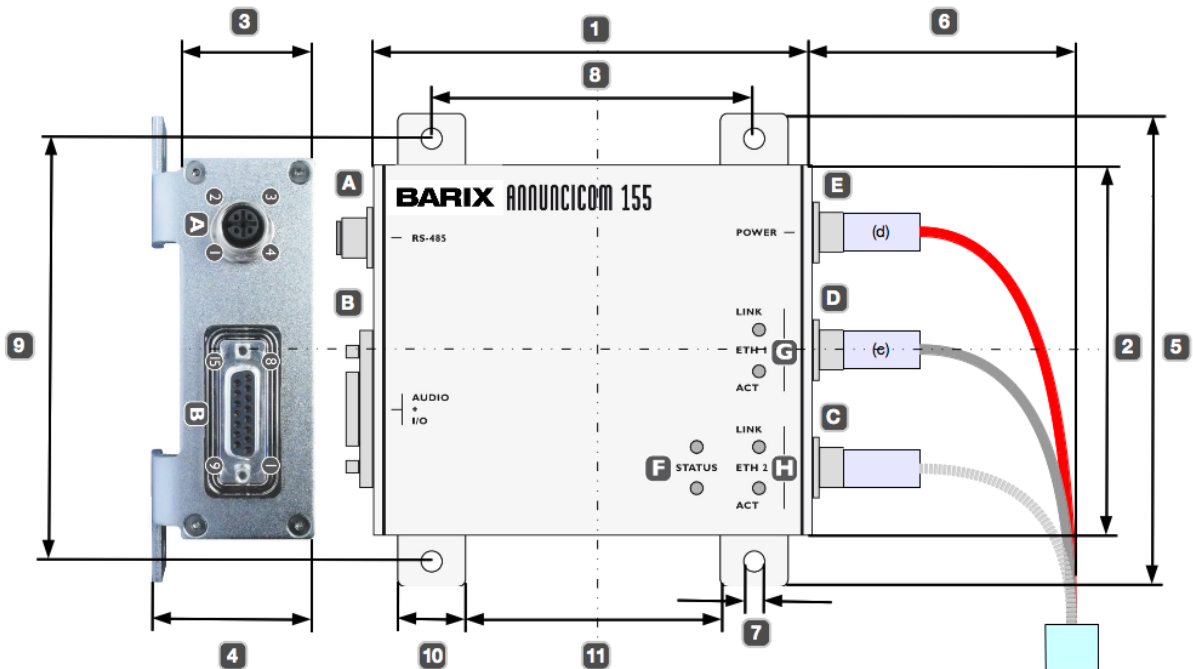
The “Web Update” procedure does not change the current configuration.

Barix recommends nevertheless checking for correct parameters in the configuration as well as to set parameters for newly added features.

If you observe strange behavior after an update Barix recommends resetting the configuration to factory defaults (see chapter “Reverting to Factory Defaults” in the according User Manual) and to start over with the configuration of the device.

6 Mechanical Informations

Mechanical Dimensions Barix Annunicom 155 (Rev. 1.3)



6.1 Dimensions and Weight

The Barix Annunicom 155 aluminum enclosure measures 130 x 108 x 38 mm (Width **1** x Height **2** x Depth **3**) / 5.12" x 4.25" x 1.5".

The Barix Annunicom 155 weighs 460 grams / 16.23 oz. (without any cables/connectors).

6.2 Space requirements

The 3 mm / 0.12" thick front and rear plates are bent to serve as mounting feet increasing the overall Depth **4** to 47 mm / 1.85".

The mounting feet increase the overall spacing Height **5** to 138 mm / 5.43".

The D-sub connector **B** stands out approximately 10 mm / 0.39", the M12 connector **A** approximately 13 mm / 0.51" and the M12 connectors **C**, **D** and **E** approximately 10 mm / 0.39" and therefore increase the overall physical depth to 153 mm / 6".

Depending on the plugs used and the suggested bending radius of the cables used on each side, the overall spacing Width is increased twice by approximately 100 mm / 4" **6** to a total of 330 mm / 13".

6.3 Mounting

For mechanical fixation the Barix Annunicom 155 features mounting feet with a 3 mm / 0.12" thickness and 4 holes with a diameter **7** of 6.4 mm / 0.25" intended for M5 to M6 screws. The holes are 96 mm / 3.78" apart in one direction **8** and 123 mm / 4.84" apart in the other

direction **9** .

The feet have a width of 20 mm / 0.79" **10** and are apart from each other by 76 mm / 3" **11** .

6.4 Thermal considerations

The Barix Annunicom 155 is a low power consumption device (14W max.) with an operating temperature range of -40 ~ 70° C / -40 ~ 158° F .

Nevertheless an adequate space around the enclosure is needed to allow for sufficient air flow in order to prevent overheating, especially when mounted in racks with higher power consumption devices or in a high temperature environment.

7 Technical data

7.1 Power supply input

Parameter	Min	Max	Unit
Supply voltage (Nominal)	24	48	VDC
Supply voltage (Absolute Maximum Ratings)	16.8	60	VDC
Power consumption max.		14	W
Isolation voltage		1500	V

7.2 CPUs / Memory

Parameter	Details
Central processing unit	Lantronix DSTni-EX, 256 KB zero wait state static RAM
Controller	PIC16F870 (Generator & Supervision)
Firmware & App. Memory	2MB Flash ROM (approx. 1700KB free for user data, varying depending on loaded firmware)
Configuration Memory	2KB EEPROM

7.3 Network Interfaces

Parameter	Details
Connector type	2 sockets, M12 "D-Coded" female, internal Ethernet switch circuit
Functionality	10/100 Mbit, full / half duplex, auto negotiation, auto MDI/MDI-X
Status display	Link / Activity LED per interface
Protocols	TCP/IP, UDP, RTP, SIP, DHCP

7.4 Serial Interfaces

Parameter	RS-232 (internal only*)	RS-485
Connector type	Internal 4 pin header*	M12 "A-Coded" female socket
Signals	RxD, TxD (both TTL level), 5VDC, GND	A, B, 12VDC (100mA), GND
Baud rates	300 .. 230400	300 .. 230400
Data bits	7 or 8	7 or 8
Parity	No, Even, Odd	No, Even, Odd
Stop bits	1 or 2	1 or 2
Flow control	No, XON/XOFF	No, XON/XOFF
Power for external devices	+ 5 VDC, 20mA max. for RS-232 converter circuit	+ 12 VDC 100mA max. (self-resetting fuse)

* The RS-232 interface is internal and for production purposes only !

7.5 Audio & I/O Interfaces

Panel Interface

Parameter	Details
Connector type	Sub-D 15 pin female
Audio input*	Electret Mic input
Audio output*	Speaker output, Line output
Discrete I/O*	2 supervised inputs, 1 LED driver output

* For details see following sections.

Audio Processor (Codec)

Micronas MAS3587F Encoding features:

Format	Sampling rate / Bit rate type
PCM 16bit linear	8, 16, 22.05, 24, 32, 44.1, 48 kHz
PCM 8bit logarithmic (μLaw / aLaw)	8, 16, 22.05, 24, 32, 44.1, 48 kHz
MP3 MPEG1 Layer 3	32, 44.1 and 48 kHz / VBR (variable bit rate 65..192 kbps)
MP3 MPEG2 Layer 3	16, 22.05 and 24 kHz / VBR (variable bit rate 35..168 kbps)

Micronas MAS3587F Decoding features:

Format	Sampling rate / Bit rate type
PCM 16bit linear	8, 16, 22.05, 24, 32, 44.1, 48 kHz
PCM 8bit logarithmic (μLaw / aLaw)	8, 16, 22.05, 24, 32, 44.1, 48 kHz
MP3 MPEG1 & MPEG2 Layer 3	8 to 48 kHz / CBR, VBR (constant and var. bit rate 32..320 kbps)

Electret Microphone Input and A/D Conversion

Microphone input path and A/D conversion (Micronas MAS3587F) typical values:

Parameter	Value	Unit
Bias Voltage (Electret capsule minimal Bias voltage)	2.5 .. 4	VDC
Bias current max.	2	mA
Analog input clipping level (at input gain 0 dB and microphone gain 21dB)*	0.195 -21	Vpp dBu
Analog input impedance (differential)	18	kΩ
Frequency response (-3dB) @48 kHz sample rate PCM	45..22'500	Hz
Analog line input signal-to-noise ratio (SNR)	-70.9	dB
Dynamic Range	71	dB
Input Total Harmonic Distortion (THD @ -3dBFS)	0.025	%

* Software selectable input gain from -3db to +19.5dB in 1.5 dB steps in series with a software selectable microphone gain from +21db to +43.5dB in 1.5 dB steps

Line Output and D/A Conversion

Line Out audio output path and D/A conversion (Micronas MAS3587F) typical values:

Parameter	Value	Unit
Full Scale Output Voltage (Peak-to-peak) unloaded*	8.44 11.7	Vpp dBu
Full Scale Output Voltage (Peak-to-peak) into 600 Ohm load*	8.15 11.4	Vpp dBm
Analog output impedance	40..45	Ω
Frequency response (-3dB) @ 48 kHz sample rate PCM	9..23'470	Hz
Output signal-to-noise ratio (SNR)	-82	dB
Dynamic Range	82	dB
Output Total Harmonic Distortion (THD @ -3dBFS)	0.128	%

* Output level software controllable

Speaker output and D/A Conversion

Speaker output audio path and D/A conversion (Micronas MAS3587F) typical values:

Parameter	Value	Unit
Full Scale Output Voltage (Peak-to-peak) 8 Ohm load*	18.99	V _{pp}
	6.72	V _{RMS}
Max output power on 8 Ohm speaker	5.64	W _{RMS}
Frequency response (-3dB) @ 48 kHz sample rate PCM	9..17'000	Hz
Output signal-to-noise ratio (SNR)	-82	dB
Dynamic Range	82	dB
Output Total Harmonic Distortion (THD @ -3dBFS)	0.094	%

*Output level software controllable

Discrete I/O

Parameter	Value	Unit
Supervised Inputs Sensing Voltage (max.)	10	VDC
Series Sensing Resistor Value	10	kOhm
Parallel Sensing Resistor Value	10	kOhm
LED Driver Output Voltage (max.)	10	VDC
LED Driver Output Current (max.)	20	mA

Built-in Parts

Parameter	Value	Unit
Green Status LED Current (max.)	6	mA
Red Status LED Current (max.)	7	mA
Temperature Sensor Measurement Range	-55..116	° C
	-67..240	° F
Temperature Sensor Measurement Resolution (A/D conversion to 8 bit signed value)	0.92	° C
	1.656	° F
Temperature Sensor Precision	+/- 1.5	° C
	+/- 2.7	° F

7.6 Mechanical

Housing

Aluminum case, with mounting wings (4 mounting holes 6.4 mm / 0.25" dia)

Weight

460 grams / 16.23 oz. (without any cables/connectors)

Dimensions

Parameter	Width	Height	Depth	Unit
Device enclosure	130	108	38	mm
	5.12	4.25	1.5	inch
Including mounting wings and built-in connectors	153	138	47	mm
	6	5.43	1.85	inch
Including external plugs (approx.)	230	138	47	mm
	9	5.43	1.85	inch
Including external plugs and cables (approx.)	330	138	47	mm
	13	5.43	1.85	inch

7.7 MTBF Calculations

Parameter	Value	Unit
MTBF calculated according to	MIL217F	-
Calculated Supply Voltage	24	VDC
Calculated Temperature	40 104	° C ° F
Calculation for Ground Mobile Device	50'000	hours
Calculation for Ground Fix Device	140'000	hours

7.8 Environmental

Parameter	Value	Unit
Operating Temperature Range	-40..70 -40..158	° C ° F
Operating Humidity Range (non-condensing)	0..95	%
Storage Temperature Range	-40..70 -40..158	° C ° F
Storage Humidity Range (non-condensing)	0..95	%

7.9 Certifications / Compliances

Type	Certifications/Compliances
Complies with	RoHS, FCC B, CE B, C-Tick, UL (planned)
Immunity according to	EN 55024, EN 50121, EN 61000-6-2, EN 50155
Emissions according to	EN 55022, GL "Brücke", EN 50155
Environmental according to	EN 50155
Product Safety according to	EN 60590

8 Ordering Information

8.1 Annunicom 155 NoPSU Package

Barix ordering number **2010.9098**

Package contents:

- Annunicom 155
- Quick Install Guide

For evaluation purposes a power supply, network cable and mating connectors are offered separately as the Annunicom 155 accessory kit, see below.

8.2 Annunicom 155 Accessory Kit

Barix ordering number **2010.9099**

Package contents:

- M12 “D” to RJ45 ethernet cable
- 24V power supply with M12 “A” connector
- Sub-D 15 connector for Panel interface (Audio & I/O)
- M12 “A” connector for RS-485 interface

9 Legal Information

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Newest information about our devices is available via download from our website, www.barix.com.

We explicitly reserve the right to change and improve the product without notice.

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