# BARIX

# **Quick Install Guide**

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The scope of this document is to give a general introduction on the IP Former TPA400 helping the user to run a basic setup and have an audio stream playing out from the device.

### 1 Package Content

- IP Former TPA400 device
- Speaker Connector

The Barix IP Former TPA400 is an audio over IP decoder which includes an amplifier to drive a loudspeaker. All configurations for this device are done locally on an integrated web interface. The operational status of the device is indicated by two multicolour LEDs (red/green).

# 2 Installation

### 2.1 STEP 1 Connecting to Audio Equipment

The IP Former needs connection to the Speaker Equipment through the screw connector provided on the front panel of the device. The speaker output supports speaker impedance of 4 and 8 ohms (2 ohms is also possible but the output power of the amplifier is optimized and configurable to match 4 and 8 ohms speakers).

### 2.2 STEP 2 Connecting to a PoE switch

Connect your IP Former to the Network using a standard Ethernet cable (CAT5e or better). The network will need to provide standard PoE power supply IEEE 802.3af (15W per port) or higher. The class negotiated is Class 0, which will allow the switch to deliver up to the maximum capability per port (power available at PD for 802.3af <= 12.95W).

- The IP Former is configured to be a DHCP Client by default.
- System Status LED green solid: Device has started up and is running.
- Application Status LED green solid: Application has started and is running.



#### Tips for a proper startup

- 1. Verify that your speaker is connected to the IP Former
- 2. Verify that your network cable is connected to a PoE Switch and a DHCP server is available within the network
- 3. During startup, the IP Former will acquire an IP address and announces it on the speaker output
- 4. By default the device will announce itself to a Syn-Apps server (and to an Informacast server if licensed), System Status LED and Application Status LED turn solid

The IP address of the IP Former is useful in order to do further configuration (e.g. configuring other sources etc) using its local web user interface via web browser.

# 3 Managing Sources and use of the IP Former

### 3.1 STEP 1 Login

- 1. Use your web browser to log into the IP Former Web Interface by typing the IP Address into your browser.
- Use the user "admin" and the appropriate password provided on the sticker on the backside of the device (PW label)

### 3.2 STEP 2 Configure your Sources

For the configuration of your sources, the following source types are available:

- Syn-Apps → annouces the IP Former as an audio device in a Syn-Apps system
- Informacast (if licensed) → annouces the IP Former as an audio device in an Informacast system
- Barix Radio → plays Barix Radio as http stream without any further configuration
- RTP  $\rightarrow$  configures the IP Former to receive an RTP stream
- HTTP(S)  $\rightarrow$  configures the IP Former to receive an HTTP or HTTPS stream
- SIP  $\rightarrow$  configures the IP Former to be a SIP client (peer to peer or Server mode)
- Local File  $\,\rightarrow\,$  allows to play audio files which are locally stored on the IP Former

Please refer to the help description in the user interface in order to properly configure your sources.

Individual Volume can be set for every of the sources.



ttings Sources Audio Files Speaker Status System Status Logs Defaults Update Reboot Remote Config	IP Speaker MAC 00:08:E1:08:54:47 Fr
ttings <mark>Sources</mark> Audio Files   Speaker Status   System Status   Logs   Defaults   Update   Reboot   Remote Config   P Speaker   TPA400	
	·
ources	Help
nput Sources Priority Table	Input Sources Priority Table
Import Export	Definition of the sources that will be played according to the priority assigned.
	Changing any parameter will only take effect after submit.
on Priority 1 V Type InformaCast V	Import
Name Informacast	Import definitions of sources exported by another device. After import, you have to submit the changes to t effect.
InformaCast URL leave it empty for auto or http[s]:// <server>[:<port>][/<path>]</path></port></server>	Export
Volume 90%	Exports definitions of sources. Only available as long as there are no changes
	Enabled
ov Priority 2 V Type Syn-Apps V	Enable or disable source
Name Synapps	Priority
Server leave it empty for auto	Sets the source priority. If two sources have the same priority, no specific behaviour is guaranteed.
Volume 90%	Туре
	Type of source to use:
on Priority 3 Type SIP	Barix Radio - Barix Radio.
Name SIP Emergency call	<ul> <li>Local file - Play a local file triggered by UPD.</li> </ul>
SIP mode Server and Peer-to-Peer	InformaCast - InformaCast audio.     RTP - RTP stream.
Server Domain sip100.barix.com	SynApps - SynApps audio.
User Name 9246	<ul> <li>SIP - Receive SIP phone call.</li> <li>HTTP - HTTP or HTTPS Audio Stream.</li> </ul>
Password	
Transport & Security TLS + SRTP V	Name
Volume 90%	User friendly name for source.
	Sources Config Sets the configuration parameters for source in format "key": "value" separated by commas. Selecting a sou
on Priority 4 V Type Local file V	sets the configuration parameters for source in format "key": "value" separated by commas, selecting a source type will show the required config settings for that source type.
Name Local Files Trigger	Barix Radio - No parameters needed.
Trigger UDP port 8888	InformaCast
Volume 90%	<ul> <li>InformaCast URL: The URL of InformaCast service. Can be empty to use auto discovery. Auto disrequires your DHCP server to support and have enabled OPT150. If this option is not supported</li> </ul>
	the manual path to the server IP address. When entering the address manually the format is:
ov Priority 5 V Type Barix Radio V	"http:// <icast_server_ip>:8081/InformaCast/admin". IDLE audio address:Once the "InformaCast URL" is specified, you can specify the RTP stream for</icast_server_ip>
Name Barix Radio	IDLE audio. IDLE Audio is i.e. a background music stream playing via RTP from a local source wh
Volume 90%	there are no notifications triggered. If left empty, there will be no IDLE audio. Unicast or Multicas supported.
	Example: rtp:// <stream_ip>:[port]</stream_ip>
Cancel Submit	Important: only RTP protocol is supported as IDLE audio.

### 3.3 STEP 3 Prioritize your Sources

Multiple sources can be configured at the same time and are played according to their given priority.

- Priority 1: Highest priority
- Priority 5: Lowest priority

Management of priority means that a present stream will be played over another configured stream.

#### Example

#### **Example of a Priority System**

- Priority 3: HTTP Radio Stream playing Background music.
- Priority 2: RTP Streams playing ads over the background music. Background music will stop as soon as the RTP stream is present
- Priority 1: SIP call playing emergency calls. Background music or advertisements will be stopped as soon as SIP call is
  present.

#### 3.4

### **STEP 4 Manage Local Files**

Use the menu item "Audio Files" in order to manage your local files for the source type "Local Files".



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Settings Sources Audio Files Speaker Status System Status Logs Defaults Update Reboot Remote Config	IP Speaker MAC 00:08:E1:08:54:47 FW 2.6.0
IP Speaker   TPA400	BARIX
Audio files	Help
Audio files available to play with "Local file" source type.	Audio Files
Upload audio file	Upload audio files to be available to be played as a "Local File".
Upload audio files to use with local file source type. Maximum upload size is 16384 KB.	Supported file names: "myFileName.ext" or "myFile Name.ext" - special characters are not allowed and maximun one space character, two or more spaces are not allowed.
Upload	Supported audio formats: mp3,aac,flac,ac3,dts,wav,ogg
Files on device:	It's possible to upload a zip archive to upload multiple tracks at once
	After upload the audio file, it can be played sending a UDP packet to the configured port, with content:
Internal	FILEPLAY=myFileName.ext\n
select all select none delete selected	or FILEPLAY=myFile Name.ext\n
	<b>Note:</b> check if the command you use to send the message over UDP is including or not the '\n' required.
► 5.3M Covid3.wav	There's a "play" button near each audio filename that allows to play it immediately. It will play that file until the
<ul> <li>6.6M Covid4.wav</li> <li>1.2M Covid5.mp3</li> </ul>	end.
► Law Covidsings	
▶ 478.5K HappyBDay.mp3	
The device supports MP2 AAC ELAC AC2 DTS OGG WAV files	

(i) The device supports MP3, AAC, FLAC, AC3, DTS, OGG, WAV files.

The filenames should NOT contain special characters and must have maximum one space character in the name.

The limit of individual files to be uploaded is 16MB.

It is possible to upload .zip archives to upload multiple files at once.

Read the help side bar to know how to trigger the playback of the files on IP Former.

### 3.5 STEP 5 Control the IP Former

Once the sources are configured, the IP Former will start playing them accordingly. Master Volume of the IP Former can be controlled on the "Settings" page of the web interface.

Settings Sources Audio Files Speaker Status System Status Logs Defa	ults Update Reboot Remote Config	IP Speaker MAC 00:08:E1:08:54:47 FW 2:6.0
IP Speaker   TPA400		BARIX
Device Alias TPA400 Master Volume 80%		Help Device Alias
+ Network Settings		Define a alias for the device. Useful for distinguishing multiple devices on the same network and browser favorites. Need to reload page to view changes. Master Volume
+ Time Settings		Use the master volume slider to adjust in real-time the general output volume of the device. Default: "50 %"
+ Security Settings		Network Settings
* Output Amplifier Level & Speaker Settings Cancel Submit	Ĵ	Avahi announce If set to 'yes'', the Avahi announce daemon is activated. This daemon implements zero-configuration networking, including a system for multicast DNS/DNS-SD service discovery Default: 'yes' IMPORTANT:II avahi announce is disabled, the device will not be recognized by the Remote Discovery Tool.



### 3.6 **STEP 6 Monitor the IP Former**

The "Speaker Status" page on the web interface will show you the actual status of the sources of the IP Former. Every source status also includes a counter indicating how many times the actual source has been played.

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Settings Sources Audio Files Spea	ker Status System Status Logs Defaults Update Reboot	Remote Config	IP Speaker MAC 00:08:E1:08:54:47 FW 2.6.0
IP Speaker   TPA400			BARIX
Speaker Status			Help
			Speaker Status
	Informacast   InformaCast     Registered n/a		Shows the current status of the enabled sources. Sorted by priority, showing what is being heard, what is receiving data and what is not receiving data.
	Playing nothing + Advanced info Play count 0		Note: Some of the less priority enabled sources may not be displayed, as they are not relevant.
	Synapps   Syn-Apps		
	Registered No Playing nothing		
	Play count 0		
	SIP Emergency call   SIP Registered No		
	Play count 0		
	Local Files Trigger   Local file     Play count     0		
	Barix Radio   Barix Radio     Play count 1		

# **4** Remote Configuration Tool

Any IP Former device present in the network has a tab called "Remote Config" exposed in the web UI. The configuration tool lists all the devices automatically discovered in the network and allow bulk or individual configuration of them to make a system-wise configuration and maintenance fast.



peaker   1											BAR
al devices di	scovered: 60										
er	Restaurant								ff Re	ad All 🕞 Save .	All Cancel change
↑ Name	Pub Pool	↑ Settings >	Prio 1 >	Prio 2 >	Prio 3 >	Prio 4 >	Prio 5 🕻	Audio Files	≺ System ↑	Control	Copy / Push
Spkr 1	Lobby	192.168.8.112	SIP	Synapps	Local Files	Web Radio	Barix Radio	0 Files	62:42:4d:d2:b2:99		Copy Push
Spkr 2	Lobby	192.168.8.152	SIP	Synapps	Local Files	Web Radio	Barix Radio	0 Files	06:fe:43:bb:c8:1f		Copy Push
Spkr 3	Lobby	192.168.8.150	SIP	Synapps	Local Files	Web Radio	Barix Radio	0 Files	6e:17:68:85:8a:e6		Copy Push
Spkr 4	Lobby	192.168.8.163	SIP	Synapps	Local Files	Web Radio	Barix Radio	0 Files	22:ad:0f:e9:71:e4	802	Copy Push
Spkr 5	Pool	192.168.8.133	Informacast	Synapps	SIP	RTP Multicast	Barix Radio	0 Files	aa:c4:7b:5b:d9:15	<b>ð</b> o Z	Copy Push
Spkr 6	Pool	192.168.8.153	Informacast	Synapps	SIP	RTP Multicast	Barix Radio	0 Files	0a:b2:b2:e2:ed:04		Copy Push
Spkr 7	Pool	192.168.8.210	Informacast	Synapps	SIP	RTP Multicast	Barix Radio	0 Files	00:08:e1:08:54:47		Copy Push
Spkr 8	Pool	192.168.8.211	Informacast	Synapps	SIP	RTP Multicast	Barix Radio	0 Files	00:08:e1:07:6c:1a	802	Copy Push
Spkr 9	Restaurant	192.168.8.142	Informacast	RTP	Barix Radio	SIP	RTP Multicast	0 Files	6e:20:c3:c8:e2:c3	<b>ð</b> o Z	Copy Push
Spkr 10	Restaurant *	192.168.8.117	Informacast	RTP	Barix Radio	SIP	RTP Multicast	0 Files	de:92:60:e9:36:ca	<b>ð</b> o Z	Copy Push
Spkr 11	Restaurant	192.168.8.114	Informacast	RTP	Barix Radio	SIP	RTP Multicast	0 Files	92:d1:4f:74:67:31	<b>ð</b> o Z	Copy Push
Spkr 12	Restaurant	192.168.8.136	Informacast	RTP	Barix Radio	SIP	RTP Multicast	0 Files	3a:b9:0f:30:55:91		Copy Push

The Remote Configuration tool allows to:

- copy the configuration of one device to others
- save changes on device's configuration individually or in bulk
- group devices per zone and copy the configurations from one device to all in the same zone or to all zones
- sort and filter devices easily by their: names, zone, IP, MAC, source configuration.
- edit the device name
- change the device settings
- change the sources configuration and the playback priority
- reload all device's configurations or cancel the changes done
- open the webUI of another device
- perform a sound-test of a device
- Immediately view how many devices are in the network
- See which source the device is playing (green cells)

For more details on how to use the tool read the help side bar accessible clicking on the

in the right upper side of the page.

# 5 Security Settings

These settings are among the most important in the Settings page of the IP Former. In this section it is possible to Enable/Disable key functionalities:

- 1. Reboot: enable or disable the soft reboot from web user interface (button grayed out)
- 2. Reset Factory Default: enable or disable the possibility to reset the device to factory defaults from web user interface (button grayed out)
- 3. Update Function: enable or disable the possibility to update the device from web user interface (button grayed out)



# 6 Network Settings

In the IP Former Settings page there are parameters used to configure your device with the desired network settings. To set the network settings:

- 1. Wire your IP Former to a network where a DHCP server is available and switch it on, hear the IP announced over the audio output (SonicIP<sup>®</sup> function) and connect to its web browser
- 2. Locate the Network Settings in the "Settings" menu
- 3. Once settings are configured as desired click on Submit at the bottom of the page, the device will restart and if the IP is changed you must input the new address in the top bar

Settings Sources	Audio Files Speake	r Status System Statu	s Logs	Defaults	Update	Reboot	Remote Config			IP Speaker MAC 00:08:E1:08:54:47 FW 2.6.0
IP Speaker   T	IP Speaker   TPA400 BARIX									
Device Alias Master Volume	TPA400	196							Help Device Alias Define a alias for the device. Useful for distinguishing mu favorites. Need to reload page to view changes.	Itiple devices on the same network and browser
- Network Settir	○ No ♥ Yes								Master Volume Use the master volume slider to adjust in real-time the ge Default: "50%"	eneral output volume of the device.
SonicIP SonicIP Volume Web Protocol	No O Yes	0%							Network Settings Avahi announce	
DHCP IP Address Netmask Gateway IP Address	No 192.168.123.123 255.255.255.0 192.168.123.1								Avain announce If set to "yes", the Avahi announce daemon is activated. This daemon implements zero-configuration networking discovery Default: "yes" IMPORTANT: If avahi announce is disabled, the device will	
Primary DNS Alternative DNS + Time Settings	8.8.8.8								Sonicl P <sup>*</sup> If set to "yes", the device will announce its IP address over The sonic IP is announced when the device boots. Default: "yes"	r the audio output.
+ Security Settin	gs								SonicIP <sup>®</sup> Volume Sets the volume at which the SonicIP <sup>®</sup> will be announced Default: "50 %"	at boot.
+ Output Amplif	ier Level & Speaker :	-	Cancel S	ubmit					Web Protocol Changing the web protocol from HTTP to HTTPS secures server) encrypting the communication. This parameter it Default: "HTTP" Note: After changing the protocol make sure to reload th	is not affecting the HTTP audio stream functionality.

# 7 Update the Firmware of IP Former

It is always good practice to run the latest firmware on the IP Former. Latest Firmwares includes improvements and bug fixes. The firmware on the IP Former can be updated using the local web interface.

To update the firmware from the web user interface you need first to download the TAR package from the Barix website: <u>www.barix.com/downloads</u> (Firmware is under Products  $\rightarrow$  Decoder  $\rightarrow$  IP Former) or simply type: IP Former in the search bar in the same page. In this page are available only the latest firmware from Barix.

Settings Sources Audio Files Speaker Status System Status Logs Defaults Update Reboot Remote Config	IP Speaker MAC 00:08:E1:08:54:47 FW 2.6.
IP Speaker   TPA400	BARIX
Update	Help
Please read the instructions before applying the update. Please click here to start the update	Update Click on "Please click here to start the update" link. On the next page click "Browse" to select the tar file to be uploaded, then click "Upload" button to start the process. An update progress page will appear. The update can take a few minutes to complete. After a successful upload the following text appears:
Currently Loaded Version         Firmware       2.6.0         Root File System       built 2021010161344         System WEB UI       1.13         Kennel Details       Linux version 5.5.8-yocto-standard (oe-user@oe-host) (gcc version 9.2.0 (GCC)) #1 SMP PREEMPT Tue Dec 22 16:18:01 UTC 2020         Bootloader Details       U.Boot 2017.03 (Nov 19 2019- 12:21:57 +0100) Allwinner Technology	"application successfully loaded" Click on Update to go back to the update page and finish the process. NOTE: Please clear the cache or restart your browser to ensure the web interface of your device is displayed correctly after the update. Currently Loaded Version In this section you can read what are the Firmware and Kernel versions that you have currently installed on your device.

Once the package is downloaded:



- 1. Connect to the IP Former's web user interface
- 2. Navigate to UPDATE from the top bar
- 3. Click on "Please click here to start the update"
- 4. In the following page click on "Browse", locate the TAR package you just downloaded on your PC and open it
- 5. Click on "Upload" Wait few minutes while the process moves forward. Do not switch off the device while the process is
- ongoing 6. When finished the message "Update completed" appears
- 7. The device automatically reboots, wait for the boot to complete and then click on the home button and refresh the page (empty the cache of your browser to display correctly the new application)
- (i) IMPORTANT: After an update is good practice to empty and reload the page of your browser to clear eventual cached settings and values. Check how to do that in your web browser settings.

For Chrome: Press F12 (this will open developer tools)  $\rightarrow$  Right click on the RELOAD button  $\rightarrow$  Select "Empty Cache and Hard Reload"

### 8 Restore factory defaults

Sometimes it's useful to restore factory defaults. In example if a device acts weirdly or it's not reachable anymore from the network because of wrong settings. There 2 reset methods available on the IP Former:

- 1. Soft reset from web user interface
- 2. Hard reset from the front Reset button on the device

#### Soft Reset from web user interface

Settings Sources Audio Files Speaker Status System Status Logs Defaults Update Reboot Remote Config	IP Speaker MAC 00:08:£1:08:54:47 FW 2.6.0				
IP Speaker   TPA400	BARIX				
Factory Defaults	Help				
	Factory Defaults				
Reverts all settings to factory defaults.	Click on "Reset Factory Defaults" to revert all settings except "Network settings" to the factory defaults.				
Reset Factory Defaults	A local user can completely reset the device to factory defaults (Hardware Reset) including Network settings pressing the RESET button in the front plate of the device during approximately 10 seconds.				
	NOTE: The button will be grayed if the "Reset Factory Defaults" function is disabled from the Security Settings page.				

- Connect to the web user interface of the IP Former and navigate to the DEFAULTS tab
   Click on Reset Factory Defaults to perform a reset of the device
- (i) A soft reset restore all parameters except network settings. To reset completely the device including network settings perform a Hard Reset

#### Hard Reset

A hard reset restore **all** values and settings on the IP Former. To perform a hard reset:

- 1. Switch on the IP Former
- 2. Press the reset button located in the front panel of the device and keep it pressed for approximately 10 seconds. Help yourself with a pointy tool.
- 3. The green LED blinks fast for 3 times meaning it started the reset operation
- 4. Wait until the process is completed, the device reboots, you can see it from the front LED becoming red and then green again
- 5. Network settings have been restored, the IP address might be changed, listen to the SonicIP® announced over the audio output



# 9 Hardware functionality

**Front view** 



#### MIC / SPKR

Pin	Description
1	MIC IN
2	AGND
3	SPKR -
4	SPKR +

Please note that the MIC Input is for further use and does not have any functionality with the current Firmware.

**Rear view** 



#### **RESET Button**

A brief press of the button (3 seconds) will reboot the device. Holding the reset button pressed for approximately 10 seconds will reset the device and restore the factory default settings when the button is released.

#### LAN - Ethernet (RJ45)

Pin	Description
1	TX + (Transmit data) V+ mode A
2	TX - (Transmit data) V+ mode A
3	RX + (Receive data) V- mode A
4,5	V+ mode B
6	RX – (Receive data) V- mode A
7,8	V- mode B
Left LED Yellow	Activity
Left LED Green	Link / Speed (Blinking)

#### SYSTEM STATUS LED

Dual Color green/red System Status LED.

- 1. Red blinking fast: early startup
- 2. Red blinking slow: system booting
- 3. Yellow blinking: System in Rescue Mode
- 4. Orange / Yellow blinking: Downloading / Installing Firmware
- 5. Green solid: system ready



#### **APPLICATION STATUS LED**

Dual Color green/red Application Status LED.

- 1. Red solid: application not running
- 2. Green solid: application running

# 10 Compliance Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Safety and precaution recommendations apply. Find them in the download section at www.barix.com



Find your distributor on this list for more hardware.

For questions that are extending the documentation, feel free to contact us on:

International: <u>+41 434 33 22 22</u> USA: <u>+1 866 815 0866</u> Email: <u>support@barix.com</u>

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