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STREAMBOX MANUAL (IQAUDIO KIT)

AUGUST 2022

ACCOUNT NAME: ukraine_1 TO ukraine_5
PASSWORD: soundcamp
EMAIL : grant@soundtent.org [can be changed -- please see note below]

WIFI network name (set up by the dongle/modem): streambox
WIFI network password: soundcamp

STREAM URL : http://locus.creacast.com:9001/ukraine_workshop_#.ogg OR
https://locus.creacast.com:9443/ukraine_workshop_#.ogg [where # is the number
from the account name above between 1 and 5]

SERVER LIST: http://locus.creacast.com:9001/
SOUNDMAP: http://locusonus.org/soundmap

SOUNDMAP / ACCOUNT ADMIN: http://www.locusonus.org/soundmap/admin/
login/. To log in on the admin page, use the account of your box eg ukraine_1 and
the password: soundcamp

UPDATES: if the stream name, logins etc change, please note the new details below.

NOTES ON STARTUP

Your streambox is shipped as a kit for assembly.

The streambox relays environmental sounds in real time to a live online soundmap, operated by Locus Sonus at ESAAIX, Aix-Marseille. It sends a high quality stereo signal to a public server, where anyone can listen to it. The streams are not routinely recorded; but there is nothing to prevent them being recorded. This should be kept in mind when choosing a site.

Please also consult detailed instructions below, especially safety and privacy of the installation.

CONTENTS / PARTS

—Raspberry Pi Zero W (with wifi; header pins soldered)
—IQ Audio Code Zero (audio hat with microphone input and ADC) and fixings
—Anti-static bag
—SD Card (Class 10 8 GB; works as the Pi's hard drive)
—Windscreens (fur with cable ties)
—Modem (Huawei E8372) connects to internet and sets up a local wifi network
—On The Go (OTC) cable (micro USB plug to USB A socket; 15.5cm)
—USB extension cable (1m +)
—Stereo microphones (Right channel tagged Red)
—Cable glands (Right channel lock nut Red)
—Dribox enclosure with 2 pre-drilled holes
—Battery (pre charged)
—Battery cable (micro USB to USB A; to charge the battery or power the Pi)
—Power adapter (mains 110-220VAC to 5VDC with interchangeable plugs)
—Screwdriver (posidrive, small, for attaching the audio hat)
—Manual and Quick Start Sheet

ASSEMBLY

Unpack and check the contents of the box.

Charge the battery if necessary, using the mains power adaptor.

Fit the cable glands in the walls of the enclosure, with the rubber washer outside and the hexagonal lock nut inside. The rounded part of the fitting points outwards. The Red locknut indicates the Right channel for reference.

Install the microphones in the cable glands: unscrew the threaded rounded cup of the cable gland and remove the inside rubber washer. From the inside, insert the microphone capsule with its foam cover. At the same time, re-tighten the outer cup. Aim to have the face of the capsule flush with the front edge of the cup when secure. Do not over-tighten the threaded cup, which risks damaging the capsule. Avoid having the capsule recessed behind the front edge of the housing, which can create effects of being in a tube. If necessary, withdraw the capsule, put the foam back on and start again.

Once the microphones are installed, fit the windscreens: thread a cable tie through the pairs of slits in each fur disk, starting and finishing from the outside. Partially tighten the cable tie to make a pouch. Slide the cover over the cable gland until the cable tie is flush or nearly flush with the recessed wall of the enclosure. When in place, pull to tighten. The cable tie should sit behind the front cup of the cable gland, preventing wind from entering from behind. There is not much extra space in the recessed channel on the enclosure. The cable tie is re-usable and can be loosened by squeezing both wings. It is worth time and patience to install securely. If in doubt, release the cable tie and start again.

Attach the IQ Audio hat to the top of the Raspberry Pi Zero using 4 metal posts and 8 screws. (There is a screwdriver in the box.)

Take the small SD card out of the large SD Card reader and slip it into the slot on the Raspberry Pi. The card is pre-configured, with the streambox software installed.

This completes the hardware assembly.

SETUP

Make connections as follows:

Plug the microphones jack fully into the socket on the IQ Audio hat.

Connect the modem / dongle to the data port of the Rasp Pi using the (short) OTG and (longer) USB extension cables.

** Note that only the more central micro USB port on the Pi is a data port. The outer one is only for power.**

Insert a (large format) SIM card in the modem / dongle by sliding off the top cover and replacing.

Identify the power cable, which connects to the micro USB socket nearest the corner of the board OR find the short USB A to micro USB cable that connects to the battery.

STREAM

With the micro USB plug connected to the outer socket on the Pi, plug the power adapter into a mains socket
OR
Connect the battery using the USB-A to Micro USB cable.

The streambox streams, appearing on the soundmap and server list described above.

Please also consult detailed instructions below, especially concerning safety and privacy of the installation.

LOCATION

The streambox is configured to send a stream to the Locus Sonus server. By default it will appear on the soundmap at locusonus.org/soundmap in the general area of a location that has been pre-set (in this case somewhere in Ukraine), or wherever it has last been placed by a user.

The streambox is not geo-located, so the position of the microphone icon on the map does not update automatically when the location changes. It can be changed manually by logging in to the administration page listed above, moving the microphone icon by dragging, and clicking Save.

Bear in mind issues of privacy and safety.

** It is important to consider if the real location could / should be revealed. Consider placing the microphone icon over an uninhabited area. A note can be made in the

stream description from the admin page to give a more accurate sense of the site, without listing the exact location of the device.**

Your streambox could sit on a window ledge, balcony or other location. If using an extension cable, be mindful of electrical safety: **put the adaptor plug in the streambox so no cable connections are exposed to weather.** If using a battery, the streambox can be placed anywhere with a stable internet connection.

For long term installations, place a tile or piece of wood on the roof of the enclosure to give extra protection to the microphones. See INSTALLATION below.

CONNECTING TO THE INTERNET (ADVANCED / TROUBLESHOOTING)

To stream, the box needs to connect to the internet by wifi, ethernet or mobile network. Do one of these:

1. Connecting via mobile network

Connect an On The Go (OTG) cable and an extension cable to the data port on the Pi (the micro USB connector nearer the centre of the board. Connect a dongle/modem with a SIM to the extension cable. Connect the Pi to power using a USB A to micro USB cable and battery or a power adapter. Power on.

The dongle may have the settings it needs to connect to the cellular network in its system files. In this case, it will connect automatically. Check the status:

Look for the Wifi network: ´streambox´. Join using the password: soundcamp.

Check if you have an internet connection by opening a reliable page. If you do, check if the stream is present on the server list at : http://locus.creacast.com:9001/
Check that you can interact with the streambox at: http://streambox.local/

Adjust as needed (location, description etc) via the admin page: http://locusonus.org/ soundmap/dev/admin/login/: Log in with the account name and password above, select Advanced configurations, make any changes > Save.

To make any changes locally, join the wifi network set up by the dongle, browse to streambox.local, make changes in the tabs > Save. OR stop the stream, remove the SD card from the Pi and insert in a USB card reader to connect to a laptop. Use a text editor to make changes to the file streambox.txt in the root directory on the device STREAMBOX, being sure that smart quotes are turned OFF. Here you can enter, for

instance, the name and password of a local wifi network, which will allow the streambox to use the network to connect to the internet over wifi. Save, eject, re-insert in the Pi. Changes takes effect on boot. (See 3. Connecting via Wifi.)

2. Troubleshooting mobile connection issues

When you set up the streambox with a new ISP, you may need to resolve connection issues to get your streambox on the internet.

In a browser, open the admin interface for the dongle at: http://192.168.8.1

Choose ΄Log in΄ from the upper right and log in using
User: admin
Password: soundcamp
From the Settings tab > Dial-up > Profile Management
Enter the Access Point Name (APN) for your ISP for a data connection, as reported on line or by your SIM card provider.
Click apply.

In some cases, you may need to update the APN settings as set in the streambox software.

Join the Wifi network ΄streambox΄ with password ΄soundcamp΄.

In a browser window type: http://streambox.local > Enter

In the Settings tab, scroll down and ensure the checkbox ΄enable modem΄ is checked. Enter APN settings for your ISP for a data connection, as reported on line or by your SIM card provider.
> Save
From the Management tab > Reboot.
The streambox re-starts and joins the cellular network, and appears on the server and the map.

Check the stream is present on the soundmap and/or on the list at locus.creacast.com:9001/.

3. Connecting via Ethernet

If an ethernet adaptor is supplied / available, you can connect it to the data port of the Pi (the micro USB socket nearest the centre of the board). Connect the streambox

to the LAN port of a router. Connect a power adaptor and power on. Join the same network on a laptop, and use a browser to open the web interface at http:// streambox.local. In the Settings tab, update the name and password for your wifi network and make sure the box is ticked to 'turn on wifi at start'. Use the Management tab to shut down the Pi. Disconnect power and ethernet adapter. Restart. The streambox joins the network via wifi and can be accessed at streambox.local as above.

4. Connecting via Wifi

Instead of connecting to the internet via a cellular network, you can run the streambox on an existing WiFi network.

As with any Internet of Things (IoT) device, the streambox needs to know how to join the local network. There are 3 ways to input these settings.
-- Connect temporarily via ethernet and update the wifi details as in 3.
-- Connect with the dongle as in 1., join the 'steambox' network (pw: soundcamp) and in the Setings tab enter the name and password of *your own* wifie network (ie not the network set up by the steambox). Check the box to enable WiFi connection at startup Uncheck the checkbox to enable a modem connection. > Save. Power off the streambox and disconnect the modem/dongle. On restart the streambox connects over wifi.
-- Input WiFi settings manually:
Power off the streambox, disconnect the modem/dongle, remove the SD card from the Pi, insert it in the USB card reader supplied and plug into a laptop. The device STREAMBOX appears in the Finder or equivalent. Scroll down to the file streambox.txt and open with a text editor, Sublime Text or similar. If using a text editor, **be sure 'smart quotes' are turned OFF**. Add your network details to this section:
WIFI_ENABLE="yes"
WIFI_SSID="your_wifi_network_name"
WIFI_KEY="your_wifi_network_password"
Save, close the file, eject the SD card. Put it back in the Pi and power up. The streambox joins the local network. You can interact with it **on the same network** at streambox.local.

NB: the wifi name and password use a basic character set. Spaces and underlines work, but unusual characters (eg !) do not. Many unexpected issues can be resolved by checking for typos, verifying that the WiFi name and password use a restricted character set, and that the network you are using permits streaming. To troubleshoot, consider using a home network, an ethernet connection or a mobile hotspot (again with basic characters in the name and password).

In some cases, connecting over WIFI will cause interference, often heard as a ticking sound or other interference in one of both channels of the stream. To troubleshoot, experiment with moving the Pi further from the affected channel. Interference can often by reduced of removed by putting or wrapping the Pi in the anti-static bag included in the streambox.

INSTALLATION

The streambox is fully weatherproof as long as it is installed in a horizontal position with a cover. For long-term use, you can provide extra protection by putting a tile, wood or similar on top of the box to overhang the microphones and keep them dry. Consider the sound of rain falling on the upper surface. You may need a weight or tie-down to keep the box in place.

The sound may be improved / altered by raising the streambox off the ground.

If streaming with the dongle/modem, plan to install the modem outside the streambox, to improve reception and reduce interference caused by close proximity to the transmitter. A good approach can be to put the modem in a small plastic bag and cable tie it to a point above the streambox (a branch, a railing?) with the opening of the bag pointing down. Height can give better reception, reduce interference and ensure the modem is protected from rain.

Be sure that all exposed electrical connections (eg where a power adaptor plugs into an extension cable) are either in the streambox enclosure, indoors or fully under cover.

Sounds from the box appear on a public soundmap as part of a project by Locus Sonus dedicated to setting up ʹopen microphonesʹ from distant soundscapes / soundworlds. The project is not intended for recordings or musical performance. Other platforms exist for those purposes.

Putting the sounds of the place in the public domain has implications for the privacy of people who may be passing, working, speaking, living nearby. The streams are not routinely recorded, but there is nothing to stop somebody recording them (as eg Soundcamp do sometimes as part of research and documentation). Artists are asked to consider the ethics and implications of installing a stream in a location.

To tune the stream, listen on the server list or soundmap, adjust the location of the box, check the selected audio input and adjust the gain settings via the web interface at streambox.local. Here you can also adjust the characteristics of the stream

(samplerate and bitrate) which affect the quality of the audio and the data throughput. Dropouts on a slow or variable network can be addressed by reducing the stream quality until stable.

DETAIL

All parts of the streambox can be dismantled for inspection and re-fit if needed. To access the microphones, find the releasable cable tie at the bottom of the box and squeeze the jaws to release.

Adjustments to audio levels and quality (sample / data rate) can be made locally via the web interface, where you can also choose the audio input (electret condenser microphones, mono MEMS mic or AUX).

The ethernet adaptor supplied with some streamboxes allows you to power the device via Power over Ethernet (POE). This requires a separate injector and ethernet cable (up to 100m).

The streambox runs well as an off-grid device using a battery and 4G modem/dongle. To avoid interference, add an extension cable between the OTG cable and the modem. Consider attaching the modem up high, protected in a waterproof bag.
The streambox can run for a week or more with a 12V 'leisure' battery with a 12V to 5V charge converter. Alternatively, a solar battery, charge controller and panels can be used for long-term operation.

For details on the build and configuration, see the workshop notes:
https://paper.dropbox.com/doc/Streambox-building-workshop--Bd14Mmns226ojsstuy3HMI0HAQ-Ax3DKrA6Dl5sqIyrmuOZQ

The huawei dongle can be reset to default settings, and other settings changed. When reset, WIFI network name and password revert to those shown on the device, under the sliding cover. The device appears on the network at the IP shown: 192.168.8.1. To log in to the admin page, the default logins are:
user: admin
pw: admin
Make a note of any changes you make to these settings.

Check documentation from soundtent.org for information on this and other streaming recipes.

LINKS

General information on audio streaming equipment, approaches and projects: soundtent.org.

Streaming software, mobile streaming app, downloads and documentation: locusonus.org.

Soundmap (where streams appear for public listening) locusonus.org/soundmap.

Streams on the server as a list:
http://locus.creacast.com:9001/

Administration page (log in with account name and password above):
http://www.locusonus.org/soundmap/dev/admin/login/

SUPPORT

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