

aCSTV — antiX Community Simple TV Starter

Usage instructions:

This Program is meant for easy receiving of locally available TV stations via data stream in the internet. The selection of stations and assignment to buttons is configurable freely. It is also possible to add international stations in case these are not *geoblocked* by streaming provider for the respective country.

For receiving a station you'll need to have an internet connection established.

- Start TV reception:

In order to start receiving of TV press one of the station buttons (left mouse click).

Hint: It might take up to 12 seconds until TV image appears. In contrast to analogue TV, where switching from channel to channel takes not more than fractions of seconds, even when using historic tube receiver, in digital receiving technique it is necessary to establish a connection to the respective service provider via internet first. Moreover the incoming data are to be buffered for some seconds to ensure a failure free playback, which means an additional delay before proper playback can start. The duration of the delay depends on many different parameters, amongst others on the response time of transmission service provider servers and the processing speed of your equipment.

- Switch TV stations:

In order to switch to another station simply press another station button.

- Stop of receiving TV:

Press »*Stop*« button to end the recently displayed TV transmission.

- Exit program:

In order to leave aCSTV press the »*Exit*« button or press »b« key.

- TV Program preview:

When pressing the button »*Program preview*« the recent program preview time table will be displayed in the systems default internet browser. The favoured provider URL is configurable in the program settings.

- Scene photo:

The button »*Scene photo*« creates a photo of the recently displayed TV image. The photograph will be stored in the folder as set in program settings, using the filename *Stillphoto-<Station>-<Date>-<Time>.png* . Example: *Stillphoto-Arte-03.10.2021-17:14:22.png*

- Recording function:


Creates a recording of the recently played station program and is started by pressing the button »*Video recording*«. In system's status bar a read recording control symbol will be displayed. Clicking on this aCSTV recording symbol will open an informational dialog. The precision of values displayd will increase as a function of recording time elapsed. The record will be stored in the folder as set in program settings using the filename *Broadcast-Recording-<Station>-<Date>-<Time>.ts* . The file format *.ts* can be played using e.g. *mpv*. Example:

Broadcast-Recording-Phoenix-03.10.2021-16:02:31.ts

To stop recording, press the »*Stop recording*« button. The record will end and the station is played back along without recording. For technical

reasons the display of video image during the *start* and *stop* of a record is interrupted for some seconds. See section »*Miscellaneous*« for information about conversion of file formats.

- Switch stations list

The button assignment of stations buttons in main dialog field can get switched by using the button , by loading another prepared stations list. The default directory for stations lists is `~/.config/aCSTV`, but it is possible to load stations lists from any other directory where you have write access to. Sample files for many countries are present in the directory `/usr/local/lib/aCSTV/Stationslisten` and can get copied manually to aCSTV config folder for use. Some of the stations from these lists are receivable world wide, others can only get received in the respective country due to geoblocking. The list recently loaded can get updated from the settings menu automatically.

- Keyboard shortcuts and mouse control:

The following functions are accessible by keyboard and mouse, provided by MPV:

General commands

- Toggle keypad -
- Toggle full screen and window mode: Double click on TV screen running (also: f)
- Adjust video display size (fix black borders): alt + alt -
- Fix Audio/Video desynchronisation: ctrl + ctrl -
- Volume control: 9 0
- Toggle mute: m
- Gamma adjustment videoscreen: 6 5
- Brightness adjustment videoscreen: 4 3
- Contrast adjustment videoscreen: 2 1
- Color saturation adjustment videoscreen: 8 7
- Pause playback toggle: Right click on TV screen running. (also: p and blank) (up to 30 minutes, depending on data rate, as a function of fill level of local buffer)
- Fast forward / rewind (1 sec.): shift ← shift →
- Fast forward / rewind (5 sec.): ← →
- Fast forward / rewind (1 min.): ↑ ↓
(Fast forward and rewind is possible, limited by buffer size, in particular after using the pause function)
- Still photo: Button in aCSTV keypad or s key
(Screenshot will be stored in the folder preset in aCSTV settings)
- Video recording of recently displayed program: Button in aCSTV Keypad
- Time-lapse and slow motion playback; slow down/speed up (10%): []
(Only possible to a limited extent, very useful for fixing playback of defective TV streams running on wrong speed, constantly causing cache running empty when tv stream is playing too fast, or segments expired before accessed when tv stream is playing too slowly)
- Reset playback speed to normal: Backspace key

- Set and unset endless loop (A-B): l
- Toggle video stream (if present): Shift -
- Toggle audio stream (if present): #

Informational functions:

- Show details about stream and playback i, shift i
- Show Buffer and Position: o, shift o
- Show URL of tv stream F8
- Show information about current audio and video stream and subtitles (if applicable) F9

Subtitle functions (if available)

- Toggle subtitles: v
- Switch subtitle streams: j J
- Sync subtitles to tv stream: z Z

Settings:

All settings of aCSTV can be edited according to your needs after pressing the »settings« button.

- Limiting the Video data rate:

With the adjustment of the setting for maximum Display rate in kbps the data stream requested from server can be adapted to the performance of your equipment and internet connection.

1. Setting the limit to meet the performance of your system. A single core 32 bit Pentium-M with 1,7 GHz empirically can play back maximal round 3000 kbps without jitter. So on PCs of this class you should set the value approximately to a value like that. aCSTV automatically chooses the best available data stream facilitated by a stream provider below the max value set. So you may set higher values for more powerful computers, and lower values for weaker ones.
2. Setting the limit to meet the performance of your internet connection. There may be necessary an additional limitation below the value derived from the performance of your PC equipment subject to the quality of the internet (or wlan) connection used (e.g. to 1800). By all means you have to enter the lower one of these two limiting factors to achieve a jitterfree playback. Using too low values results in poor visual image quality, using too high values results in constant dropouts and jitter. Most transmissions from so called "öffentlich-rechtliche" stations of German television are provided as streams at the following data rates:

325k, 581k, 635k, 969k, 1020k, 1130k, 1790k,
1807k, 2120k, 3256k, 3544k, 3990k, 7290k

But not all these rates are available for all stations.

On some so called "private" TV Stations there are observed frequent transmission failures and server errors at peak load times, depending on the provider, even when you have set the data rate to meet your equipment and internet connection correctly. On other daytimes the reception of these will work then flawlessly again.

- Selection of TV Screen:

The screen used for output of the TV image is configurable in the program

settings. In case you have connected an analogue or digital TV device as a second monitor to your PC and configured it accordingly, the playback of the TV stream can be carried out on this device instead of your primary PC monitor by setting the corresponding number of screen. Beware: The counting starts at zero, i.e. »0« will be the primary screen, »1« the second, and so on. A maximum of 32 screens can get addressed by now.


- Full screen mode/Windowed mode
This checkbox allows to preset whether tv screen initially will be displayed in full screen or in windowed mode. You can always toggle fullscreen and windowed mode (by double click on recently running tv screen, or F key).
- Always on top
This checkbox determines, whether tv screen will get displayed on top of other windows, or whether other windows are allowed to overlap the tv screen. The actual behaviour can always get switched by context menu from taskbar icon → Level, and also by the key combination “Shift T”.
- Target folder for scene photo and video recording:
Enter the directories of your choice for storing records and photos into the respective input boxes of programs settings dialog. The default folders of antiX operating system are preset, referenced by the values \$XDG_PICTURES_DIR/ und \$XDG_VIDEOS_DIR/ .
The user logged in on system must have writing permission in the selected folders.
- Manually editing stations list
The stations list loaded can get edited manually. It is possible to add new entries and to remove or edit existing entries. As well stations names as server addresses (URLs) are editable by clicking on the respective fields. Lines starting with a sharp sign (#) are deactivated (commented out) and will not appear in aCSTV keypad.
- Automatically update stations list
The stations list loaded can get updated automatically by pressing the button “Update”. An established internet connection is needed. All the country specific stations lists are provided and continuously updated by volunteers from IPTV.org project. When automatically updating the stations list the setting “Check connection” allows to automatically disable all the stations not receivable at your location. The process may take much time (in particular for huge stations lists), since for each station, a server response must be waited for. In case of a faulty or missing server response instead of proper rejection, the connection timeout must be waited for, before the station checked can be discarded.

Miscellaneous:

Helper tools

Die Hilfsprogramme socat, feh, buffer, mpv, yd-dlp, sed, xdotool, wmctrl are to be installed. When installing from Debian installer package this is automatically assured by dependencies. If one of these components is missing, e.g. when installing manually, aCSTV will not be operational.

Size of stations lists

When using huge stations lists with more than 40-50 stations, the processing by aCSTV will become increasingly sluggish. For fast and resource saving operation, care should be taken to limit the channel list to the entries that are actually required and to deactivate (comment out by #) or remove all superfluous entries in the settings → "Edit channel list". The maximum amount of assignable buttons is limited to approx. 264, depending on the character count per stations name entry. It is possible, that the aCSTV keypad in its maximum size can not be displayed on small monitors (reduce number of active entries in stations list in these cases). All entries from excessively huge stations lists, exceeding the limits, will be ignored. Huge stations lists can be splitted by text editor like Geany or Leafpad into some more separate stations lists files, which can be switched by the button "Switch stations list" (Symbol: ) in the aCSTV keypad.

File format and conversion

The video files stored by aCSTV in *.ts* format can be directly played in antiX by MPV. If desired, the video recordings stored in *.ts* format can be converted to any other file format of your choice for which e.g. the *ffmpeg* tool can be used. A realtime conversion during recording would be only possible on very powerful highend equipment and is not implemented in aCSTV for this reason. Because of the unpredictable type of stream format a station or provider transmits, you'll have to experiment on post conversion of the stored *.ts* stream. If the format received is not compatible to the target format you'd like to have, either the audio or video stream or both of them have to be recoded, otherwise it is enough to repack the contained streams into the new target format without recoding.

Examples:

- to Matroska, without recoding
`ffmpeg -i './filename.ts' -map 0 -c copy './filename.mkv'`
- to mp4, without recoding
`ffmpeg -i './filename.ts' -map 0 -c copy './filename.mp4'`
- In case the data stream stored in the *ts* file is incompatible to your target format (e.g. *mp4*), the above conversion will fail and shows an error message only. Then you may try to recode the video stream:
`ffmpeg -i './filename.ts' -c:v libx264 -c:a copy './filename.mp4'`
- Or recoding video and audio both:
`ffmpeg -i './filename.ts' -c:v libx264 -c:a aac './filename.mp4'`

Depending on the available processing power of your equipment, the file size and the type of conversion or recoding the reformatting task may take some time.