



## **X4: Foundations - Own Radio Stations**

This mod lets you to listen to your favorite music in-game

### Features:

- Separate radio station for each track, plus a designated MP3 player station
- Keeps track of in-game happenings, making it far better, than old-school solutions
- Emulates signal weakening for radio stations, which are owned by any faction
- Uses an editable INI file for settings
- Supports on-line streamed radio stations
- Supported formats: MP1, MP2, MP3, OGG, WAV, AIFF
- Volume controls are totally integrated with the X4 Sound Options menu
- Uses the *Extension Options* feature from *SirNukes Mod Support APIs*, to allow users to change key bindings during gameplay

### Requirements:

- X4: Foundations 3.00 or later, Windows version
- SirNukes Mod Support APIs
- kuertee UI Extensions and HUD

### Installation / Setup:

- ✂ Copy the 'X4\_ORs' directory into your game's 'extensions' directory
- ✂ Edit the INI file, and set up your radio stations
- ✂ Have your local radio station files copied to the specified locations (if any)

## Controls:

- ✂ Controls can be rebound via the Extension Options menu, or by editing the INI.
- ✂ Control keys in the INI use Windows virtual key codes.
- ✂ In order to perform a mod function, you need to press Modifier key 1 + Modifier key 2 + Function key in the same time.  
Disabled modifier key means it doesn't have to be pressed to perform a mod function.  
Disabled function key means the function it invokes can't be invoked.

## Notes:

- 🔊 The radio can only be heard from the pilot chair. It's not available in spacesuit, or on platforms.

## Technical information:

- 🔧 The mod contains an EXE file, which is used to do the playback. If you tamper with the EXE, your game may freeze, when trying to communicate with the EXE.
- 🔧 The EXE uses the included BASS.DLL, to play audio.
- 🔧 The mod uses MD + LUA scripts, to control the EXE.

## Setting up the INI:

INI file location: `'extensions/X4_ORs/radiostations/settings.ini'`

Default: if a property is missing or invalid, then the default value is used.

Preset: the value used in the INI file shipped with this mod. Usually good enough for general purpose

- INI section: **[Global]**
  - **NumberOfStations**: (integer) Total number of radio stations to load. MP3 player station doesn't count to this value.
    - Default: 0
    - Preset: 0
  - **Latency**: (integer) Max number of milliseconds allowed as latency, before music is paused, once the game becomes unresponsive, or paused.
    - Accepted values: 10 – 5000
    - Default: 1000
    - Preset: 500
  - **RandomizeTracks**: (integer) If true, then the program will seek local stations to a random position, and the MP3 station to a random MP3 upon program initialization..
    - Accepted values: 0 (false), any other (true)
    - Default: 0 (false)
    - Preset: 1 (true)
  - **NoOnlineStreams**: (integer) If true, then the program will not load on-line streamed radio stations.
    - Accepted values: 0 (false), any other (true)
    - Default: 0 (false)
    - Preset: 0 (false)
  - **UseLinearVolume**: (integer) If true, then the program will attempt to 'linearize' the volume scale, working against the logarithmic scale of BASS.
    - Accepted values: 0 (false), any other (true)
    - Default: 0 (false)
    - Preset: 0 (false)
  - **LoudnessFactor**: (real) The master loudness of the program.
    - Accepted values: 0.0 - 1.0
    - Default: 1.0
    - Preset: 0.5
- INI section: **[Keys]**
  - **Modifier\_1**: Modifier key 1.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x11 (CTRL)
  - **Modifier\_2**: Modifier key 2.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x12 (ALT)
  - **Func\_PrevStation**: Previous station function key.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x28 (Down arrow)
  - **Func\_NextStation**: Next station function key.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x26 (Up arrow)
  - **Func\_ReplayThisMP3**: Replay current MP3 function key.

- Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x25 (Left arrow)
  - **Func\_SkipThisMP3**: Skip current MP3 function key.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x27 (Right arrow)
  - **Func\_ReloadApp**: Reload app function key. Pressing this key will cause the whole mod to reload, just like if it was just started. All music and the INI are reloaded.
    - Accepted values: Windows virtual key codes
    - Default: 0 (disabled)
    - Preset: 0x52 (R)
- INI section: **[Radio\_X]**: 'X' is replaced by a number from 1 to **NumberOfSections** from the **[Global]** section. Each normal radio station must have one section in the INI.
  - **FileName**: (text) The file name of the radio station; the file name can be either a relative, or an absolute file name. On-line streamed radios must have their file names start with 'http://', 'https://', or 'ftp://'
    - Default: empty (no file)
    - Examples:
      - ◆ **radio\_POP.MP3**
      - ◆ **D:\KJAH.wav**
      - ◆ **http://stream.berliner-rundfunk.de/brf/mp3-128/internetradio**
  - **Owner**: (text) Owner faction(s) of this radio station. If specified, the signal weakening can be emulated. Otherwise, the radio station will be available everywhere in-game.
    - Default: empty (no owners, no dampening)
    - Examples:
      - ◆ **antigone**
      - ◆ **hollyorder, trinity**
  - **LoudnessFactor**: (real) The individual loudness of this radio station.
    - Accepted values: 0.0 - 1.0
    - Default: 0.0 (mute)
  - **DampeningFactor**: (real) This value specifies, the strength of the signal, after each kilometer. If not specified, then the station will be available everywhere in-game. *Usually the best choice is 0.999 (~6000 km range).*
    - Accepted values: 0.0 - 1.0
    - Default: 1.0 (no dampening)
  - **RadioText**: (text) The name of the radio station. This text will be shown for 5 seconds, after changing station.
    - Default: '?Unnamed Station?'
- INI section: **[Radio\_MP3]**: Designated specifically for the last, MP3 player station. On this station, the music placed in the '**extensions/X4\_ORs/radiostations/mp3**' is played.
  - **Enabled**: (integer) If true, then the MP3 player station is enabled.
    - Accepted values: 0 (false), any other (true)
    - Default: 0 (false)
    - Preset: 1 (true)
  - **LoudnessFactor**: (real) The individual loudness of this radio station.
    - Accepted values: 0.0 - 1.0
    - Default: 0.0
    - Preset: 1.0
  - **RadioText**: (text) The name of the radio station. This text will be shown for 5 seconds, after changing station.
    - Default value: '?Unnamed MP3 Station?'
    - Preset: 'MP3 player'

## Backstory:

By default, X4: Foundations plays background music for every sector, which is usually quite good. Even the war music / suspense music is good.

Coming from the GTA world, I got used to the 'radio stations'. X4 doesn't have them, but in the beginning, it wasn't a problem.

After weeks of playing, the background music seemed to be a bit monotone, repeated. Only a little bit... but I'm way too extreme.

A few weeks before my first encounter with X4, I've modded GTA V, with an 'Own Radio Stations' mod, as a way of replacing in-game radio stations with custom ones. I used the same methodology, as it was used in GTA SA, with the SAORS mod, made by HackMan128. He used a separate background process for playing music, while replacing original radio stations with silence. That solution used memory hack to read game memory, while my GTA V ORS used shared memory + in-game script, to read game internals; this solution is portable amongst different game versions.

Based on GTA V ORS, X4 ORS uses shared memory + in-game script to read game internals, and also to keep in-game music muted (music is not removed, but simply muted, while radio is on).