

# GRITTEC'S SAMPLE RATE CONVERTER

## Speech and audio signals

### Overview

GritTec's sample rate converter is technology used for changing sampling rate in speech and audio signals. Principle of functioning algorithm is based on methods of interpolation.

### Applications

- Professional audio applications, such as audio-media players, streaming digital radio;
- With audio-video recorder devices;
- With car audio devices.

### Features

- High sound quality;
- Supports sampling rates: 6 kHz, 8 kHz, 11.025 kHz, 16 kHz, 22.05 kHz, 32 kHz, 44.1 kHz, 48 kHz and 96 kHz;
- Support dual-channel signals;
- Full compatible with most audio-speech codecs;
- Easy integration with target applications.

### Signal requirement

- Signal format: 16-bits linear;
- 6 kHz, 8 kHz, 11.025 kHz, 16 kHz, 22.050 kHz, 32 kHz, 44.1 kHz, 48 kHz, 96 kHz sampling rate;
- Channels: 2 (mono or stereo).

### Resource Requirements

RESOURCES	GOAL	NOTES
RAM	~312 Byte	Pointer to the general structure for stereo channels.
ROM	~ 1424400 Byte	Data of conversion tables for all standard rates from 6 kHz to 96 kHz. Parameters of void and tempo procedures.

Resource/Source Ratio* (MIPS)	INPUT (KHz)									
	6	8	11.025	16	22.05	32	44.1	48	96	
OUTPUT (kHz)	6	0.1	2.69	5.54	1.73	7.8	3.86	7.76	3.78	5.79
	8	2.42	0.07	21.48	3.28	19.41	3.16	19.24	4.54	4.99
	11.025	7.88	21.92	0.09	43.63	3.26	84.85	4.38	39.3	81.83
	16	4.25	4.47	43.66	0.1	41.79	4.32	38.02	5.1	5.65
	22.05	9.11	22.73	5.4	43.23	0.1	84.96	6.12	38.01	77.27
	32	7.29	7.29	88.8	7.05	86.55	0.13	81.64	8.54	9.49
	44.1	13.94	25.09	9.43	44.14	9.36	84.6	0.2	44.47	75.5
	48	9.68	10.05	50.96	10.1	43.78	10.83	44.05	0.26	10.6
96	17.63	17.7	116.8	18.43	99.86	18.34	84.1	18.79	0.5	

\* - for Intel PIII 1,5 MHz and Stereo channels signals.

### Availability

- PC demo for MS Windows;
- SDK for win32 (object code, ANSI C++ fixed point code) is available on request;
- Customization resources if required;
- Portability to any DSP, ARM platform.

GritTec Laboratory (GritTec Ltd.) specializes on research and development of algorithms and technologies in the field of speech and audio processing. GritTec's research is focused on speech enhancement, speech concealment, voice biometric, speech recognition, speech synthesis and other speech and audio technologies.

### Contacts

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