

vicDIVA Evaluation Kit for Microphone Array Beamforming

The vicDIVA evaluation kit allows you to test the beamforming algorithms of voice INTER connect. The algorithms of our vicPURE framework included in the kit can be configured for different applications. Speech enhancement through spatial filtering and noise reduction can be used to improve communication solutions or for voice assistants. The microphone array can be aligned at a speech source either manually or via automatic source localisation.

vicDIVA includes an 8-channel microphone array with status LEDs, the vicSBM hardware module for audio signal processing and a Raspberry Pi for application development. The processed and optimised speech signal is made available for use in applications via an ALSA interface on the Raspberry Pi with low latency. Voice quality can also be evaluated directly with connected headphones.

PRODUCT FEATURES

- Evaluation kit for microphone array beamforming
- 8 MEMS microphones
- 16 indicator LEDs for beam characteristics
- ALSA control interface to configure beamformer settings
- Automatic speaker localisation
- High speech signal quality with low audio latency

USE CASES

- Intercom systems
- Voice-controlled devices and industrial plants
- Voice control in smart homes
- Speech assistants
- Video conferencing
- Medical technology



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Technical Data



COMPONENTS

- 1 vicMIC M8 microphone array
- 2 Raspberry Pi 3B+ with vicSBM DSP board
- 3 SD card with vicDIVA image for Raspberry Pi
- 4 Mini tripod
- 5 Data cable microphone array
- 6 Power supply
- 7 Extension cable for headphone connection



Fig. 1: Components of vicDIVA

SPECIFICATION

Operating temperature:	-40 °C 85 °C
Dimensions (L x B x H) - Microphone array:	(100 x 70 x 3) mm
- Processing unit (incl. Raspberry Pi):	(87 x 59 x 28) mm
Power supply:	USB

RASPBERRY PI HOSTSYSTEM

- Access using local setup or SSH connection
- Provision of vicSBM audio signal via ALSA driver
- Configuration of vicSBM using ALSA controls
- Recording of vicSBM audio signal

SETTING OPTIONS

General

Processing:	Switching beamforming on / off (beamforming / bypass)
Volume:	Output volume for beamforming mode
Bypass Volume:	Output volume for bypass mode
LED R/G/B:	LED intensity per colour channel (red / green / blue)

Directional Characteristics

Azimuth:	Horizontal angle of the beam direction, automatically determined and visualised when speaker localisation is activated
Elevation:	Elevation angle between microphone array and beam, manually controlled
Directivity:	Intensity of spatial noise suppression

Speaker Localisation

Beamsteering:	Switching the operating mode (Manual / Auto / Auto Noise-Aware) of automatic localisation with optional noise suppression
Act. Threshold:	Minimum sound level for speaker localisation (detection threshold)



Fig. 2: Configuration of vicDIVA via ALSA interface

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