



vicMICM4

Evaluation Kit for Far-field Voice Acquisition

Intelligent microphones are a prerequisite for a perfect user experience with voice assistants or voice-controlled user interfaces in industrial systems and plants. They also ensure a high level of intelligibility in modern communication systems and in-car infotainment solutions. Their use enables completely new device designs and eliminates the need for a gooseneck microphone.

By using INTER connect's beamforming algorithms for microphone arrays, the highest quality voice signals can be captured. This allows devices to be operated by voice from a greater distance, even in the presence of interference or competing speakers.

The vicMICM4 evaluation kit can be used to test a miniaturised beamforming microphone and its spatial noise suppression and speech enhancement capabilities. vicMICM4 consists of a circuit board with four high-quality MEMS microphones and an integrated controller for signal processing. The kit allows the microphone array to be mounted flat behind a device front. Nevertheless, the intelligent combination of the individual microphone signals enables a directional effect to be achieved perpendicular to the front of the housing. This characteristic allows, for example, the optimal detection of a speaker directly in front of the microphone (in the sense of an improvement in range) as well as the suppression of noise coming from the side. The corrected speech signal is output in analog form or via the USB interface.

PRODUCT FEATURES

- Evaluation kit for algorithms that enable robust detection of speech signals in the far-field
- Suppression of lateral noise and unwanted room influences such as reverberation and reflections
- Spatial alignment of the signal detection
- Low audio latency and high speech signal quality

APPLICATIONS

- Intercom systems and control centres in industrial surroundings
- Vehicle communication systems and infotainment solutions
- Emergency telephones
- Voice-controlled devices and industrial plants
- Speech assistants
- Medical technology and intelligent displays
- Music and voice recorders, as well as smartphone accessories

COMPONENTS

Nr. Description

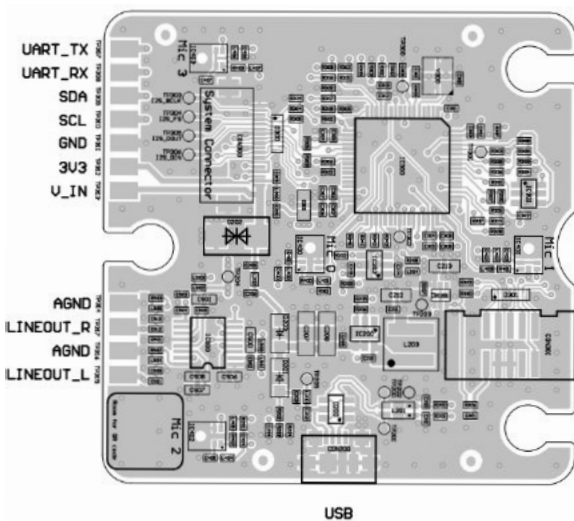
- 1 vicMICM4 microphone array
- 2 Power supply unit with micro USB plug
Audio cable with 3.5 mm jack socket or USB cable with micro USB plug (not included)



Pict. 1: vicMICM4 microphone array

SPECIFICATION AND INTERFACES

Operating temperature:	-40 °C ... 85 °C
Power supply:	Separate unit recommended V _{IN} = 3,3 V (edge contacts)
LINEOUT_L/R:	Analog audio signal
UART_TX/RX:	UART interface
SDA/SCL:	I ² C interface
USB:	Micro USB socket

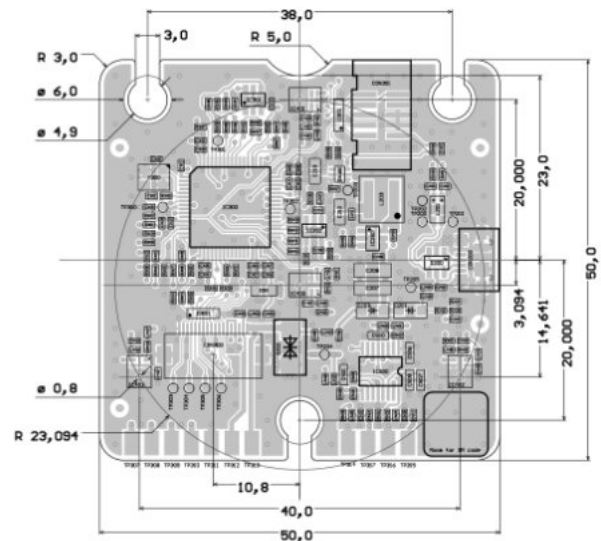


Pict. 2: vicMICM4 interfaces

FUNCTIONAL PRINCIPLE

The four separately recorded microphone signals are intelligently combined by the vicMICM4 controller in order to emphasise the speech signal recorded directly in front of the microphone array and to suppress the background noise (speech and background noise) coming from the side. In this way, the vicMICM4 creates a spatial directional effect.

The output signal of the filtering (corrected speech signal) is routed to the output interfaces of the vicMICM4.



Pict. 3: vicMICM4 dimensions in mm

USECASES

Analog

In order to use the vicMICM4 as a replacement for a classic EMC microphone, an analog microphone signal can be output via the line-out interface.

USB

The vicMICM4 operates as an intelligent USB sound card when connected via the mini-USB interface. Power is supplied and audio is transmitted via the mini-USB interface. This makes the vicMICM4 suitable as an accessory for most PCs, smartphones and tablets, and it can also be easily operated on embedded platforms without an audio codec (e.g. Raspberry Pi).

Control

The UART and I²C interface are connected to the edge contacts for configuration and monitoring the integrated temperature sensor.

Device Integration

Please contact us for the integration of the single-sided PCB into your target device.

ORDER NOW

vicMICM4 Beamforming Evaluation Kit
Order number: 3-9016-00-22-01