Features
- Multichannel USB mic array
- Stereo Class D amplifier
- Onboard DSP for beamforming/noise reduction/AEC/de-reverb

Technical
- XMOS XVSM 3000 series
- USB 2.0 audio streaming
- Knowles SPH1668LM4H MEMS (7)
- 2x15Wrms digital audio amplifier
- 12 x RGB led

OS compatibility
- UAC2.0 with Windows ASIO driver, OS X driverless, Linux Alsa 2.0

Power
- USB Bus powered (Amplifier OFF)
- 12VDC powered (Amplifier ON)

Applications
- Voice activated projects
- Far field microphone applications
- Compatible with Alexa/Google Home SDK/Siri/Watson/Cortana
- Speakerbox for conferencing
- Robotics/IoT/Smart home...

The **UMA-8-SP** is a high-performance USB microphone array paired with a digital audio amplifier. Seven high-performance MEMS microphones are configured in a circular arrangement to provide high-quality voice capture in far-field microphone applications such as AI assistants, conferencing, robotics...

Leveraging the onboard DSP processing, the **UMA-8-SP** supports voice algorithms including beamforming, noise reduction, acoustic echo cancellation and de-reverb. The UMA-8-SP is a fully compliant UAC2 audio interface with driverless support for Mac/Linux and ASIO drivers for Windows. An onboard 2x15Wrms digital amplifier provides an all-in-one microphone array + amplifier integration. The perfect fit to build your own AI assistant or conferencing unit.

From DIYers to OEM, this pocket-size platform is engineered for flexibility in firmware, software and hardware. Feel free to contact miniDSP on how we can help kickoff your new project!

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**SYSTEM DIAGRAM**

Beamforming DSP isolates voice vs background noise

Steady state noise is attenuated by noise reduction algorithm

Compatible AI assistants

USB Audio (7ch raw OR 2ch DSP mode)

2x15Wrms Amplifier out

FROMDIYERTOCEM, THISPOCKET-SIZE PLATFORMISENGINEEREDFLEXIBILITYINFIRMWARE, SOFTWAREANDHARDWARE. FEEL FREE TO CONTACT MINIDSP ON HOW WE CAN HELP KICKSTART YOUR NEW PROJECT!
### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB streaming engine</td>
<td>X.MOS XSVM 3000 - Multicore USB audio processor with embedded DSP</td>
</tr>
<tr>
<td>USB audio capabilities</td>
<td>USB audio recording in 2 possible modes depending on firmware:</td>
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<td></td>
<td>- 8-channel mode (7 x MEMS installed + 1 x spare PDM port in the center)</td>
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<td>- Stereo recording with DSP processing enabled</td>
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<td>USB audio playback: Stereo channel to digital audio amplifier</td>
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<tr>
<td>DSP processing (prebuilt firmware)</td>
<td>• Beamforming with configurable beam width (up to 20dB attenuation)</td>
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<td>• Perceptual acoustic echo cancellation (up to 80dB attenuation)</td>
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<td></td>
<td>• Noise suppression (up to 20dB attenuation)</td>
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<td></td>
<td>• De-reverb (up to 20dB attenuation)</td>
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<tr>
<td>UAC2.0 drivers</td>
<td>Driverless interface for Mac OS X v10.6.4 and up</td>
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<tr>
<td>Resolution / Sample rate</td>
<td>24bit @ 11/16/32/44.1/48 kHz</td>
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<tr>
<td>Amplifier output</td>
<td>Stereo class D amplifier / 2x15Wrms amplifier output (Mono Audio Output)</td>
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<td>&gt;90% efficiency at full power.</td>
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<td>MEMS microphones</td>
<td>7 x Knowles SPH1668LM4H with low noise buffer and high performance modulator</td>
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<td></td>
<td>• Low distortion: 1.6% @ 120 dB SPL</td>
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<td></td>
<td>• High SNR: 65 dB and flat frequency response</td>
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<td></td>
<td>• RF shielded against mobile interference</td>
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<td></td>
<td>• Ominidirectional pick-up pattern</td>
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<tr>
<td>LED</td>
<td>12 x RGB LED / Bottom mounted</td>
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<tr>
<td>Expansion connector</td>
<td>2 x 12-pin, 2 mm pitch expansion connector for connectivity to hardware.</td>
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<tr>
<td>Power supply</td>
<td>USB powered (Amplifier disabled) or +12VDC (Amplifier enabled)</td>
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<tr>
<td>Dimensions (diameter) mm</td>
<td>90 mm diameter / 20mm height with LED ring, 14mm height without LED ring</td>
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### MECHANICAL DRAWINGS

**J3 / Audio data & clocks**

- J3.1 - I2S_OUT_0
- J3.2 - I2S_IN_0
- J3.3 - I2S_OUT_1
- J3.4 - I2S_IN_1
- J3.5 - I2S_OUT_2
- J3.6 - I2S_IN_2
- J3.7 - I2S_OUT_3
- J3.8 - I2S_OUT_4
- J3.9 - MCLK
- J3.10 - I2S_BCLK
- J3.11 - GND
- J3.12 - I2S_LRCLK

**J4 / XMOS JTAG connector**

- J2.1 - GND
- J2.2 - 3.3V
- J2.3 - GND
- J2.4 - 3.3V
- J2.5 - N/A
- J2.6 - UART_TX
- J2.7 - UART_RX
- J2.8 - XMOS_RST
- J2.9 - I2C_SDATA
- J2.10 - I2C_SCLK
- J2.11 - N/A
- J2.12 - N/A

Features and specifications are subject to change without prior notice.