

## Features

- 16channel Microphone Array
- Uniform Rectangular Array (URA)
- USB, PDM & Customizable IO card

## Hardware

- ADI ADSP21489 @ 400MHz
- XMOS XCore200 @ 500MHz
- 16 SPH1668LM4H Knowles MEMS
- Asynchronous USB audio
- Mic array PCB schematics are provided as a reference design

## Software Control

- ASIO drivers for Win 7/8/10
- Driverless UAC2 for Mac OSx/linux
- Compatible with Matlab toolbox
- Firmware upgradeable

## Power

- Single external 12VDC supply

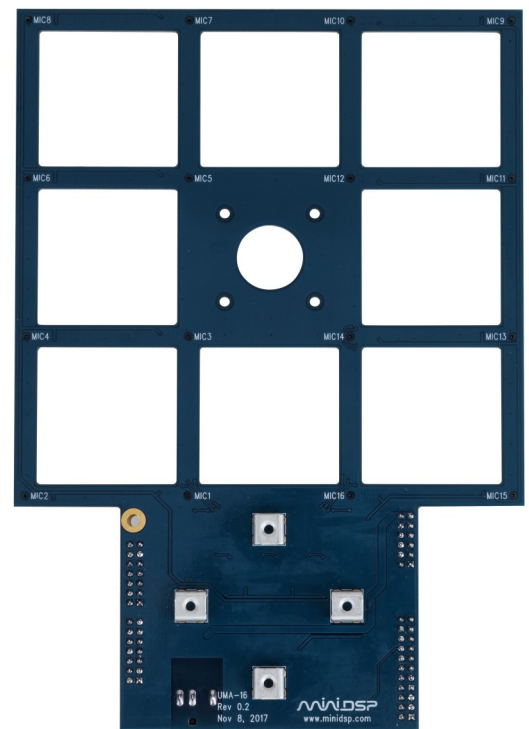
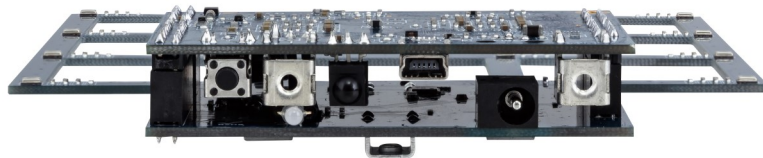
## Applications

- Acoustic camera
- Research & Development
- Microphone array

The **UMA-16** is a sixteen channels microphone array with plug&play USB audio connectivity. With its onboard SHARC+XMOS controller board, the **UMA-16** is the perfect fit for the development of beamforming algorithms or your DIY acoustic camera. Its system architecture consists of two core elements:

- The microphone array PCB has 16 x SPH1668LM4H MEMS Knowles laid out in a Uniform Rectangular Array (URA). A center hole fits an optional USB camera for applications such as an acoustic camera. Being a simple 2layer PCN, one can easily customize his own array layout by following our schematics.

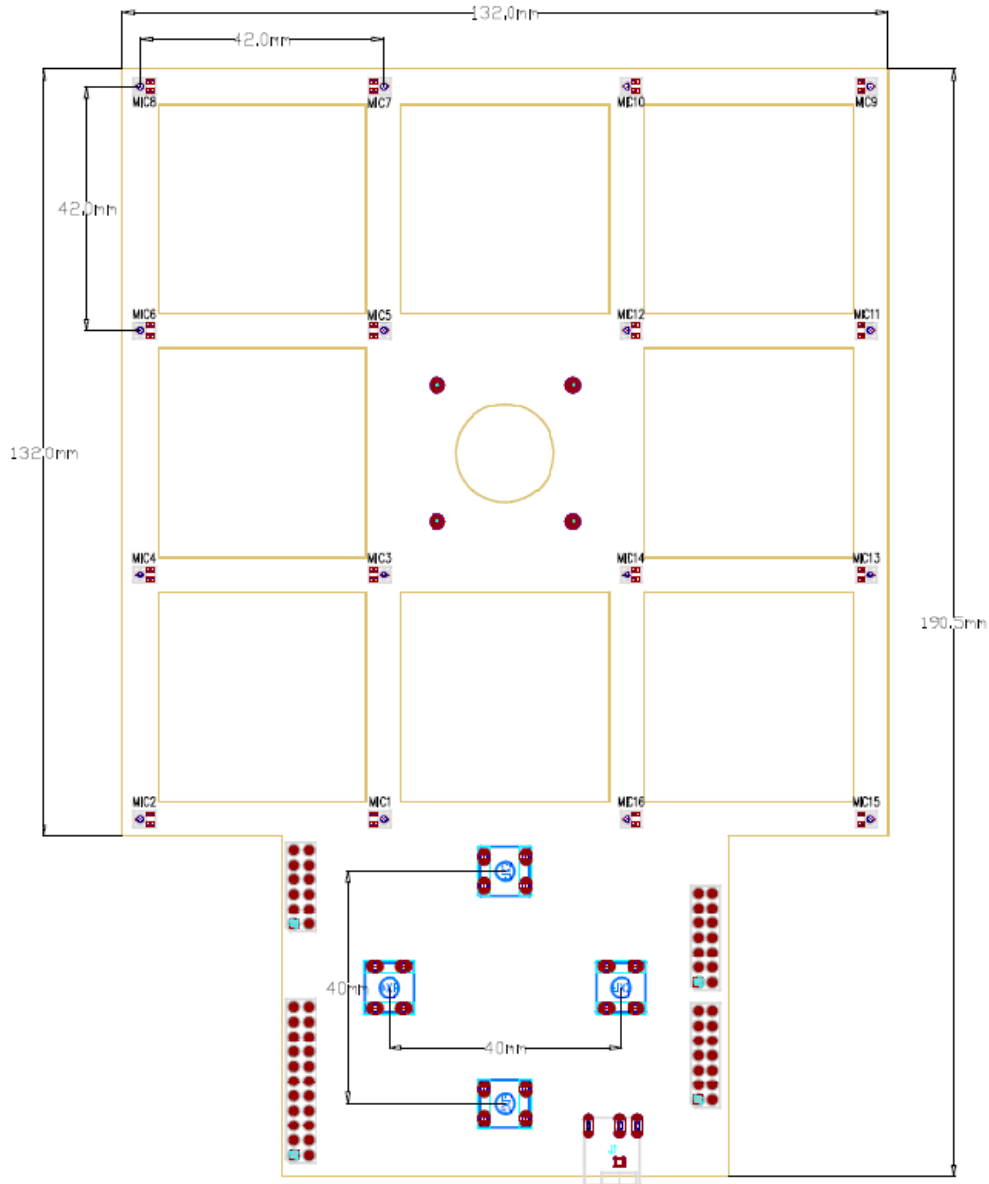
- At the helm of the **UMA-16** operation is the nanoSharC kit. A 400MHz SHARC ADSP21489 + 500MHz multicore CPU providing substantial processing power for high SNR PDM to PCM conversion and multichannel low latency USB audio.



## TECHNICAL SPECIFICATIONS

| Item                             | Description   |
|----------------------------------|---|
| Digital Signal Processor         | 32-bit Floating point Analog Devices SHARC ADSP21489 / 400 MHz - Configuration locked   |
| USB audio input                  | XMOS Xcore200 asynchronous USB audio up to 192 kHz, USB Audio Class 2 compliant <ul style="list-style-type: none"> <li>· ASIO drivers for Windows</li> <li>· Driverless for Mac OS X</li> </ul> |
| PDM inputs                       | Up to 16 x MEMS microphone connections (8 x stereo PDM data lines)  |
| MEMS microphone                  | 16 x SPH1668LM4H - Acoustic Overload @ 120dB SPL / High SNR of 65dB / RF shielded   |
| ADC/DAC Sample rate & Resolution | Resolution: 24 bit<br>Sample rate: 14.7k/11.025k/12k/16k/22.05k/44.1k/48k   |
| USB port                         | USB port type Mini-B for audio streaming and firmware upgrade   |
| Power supply                     | 12 VDC single supply / Header input / 2.5W  |
| Dimensions (H x W x D) mm        | 132 x 195 x 25 mm   |
| Mounting                         | 4 x M3 holders for front panel mounting / CAD drawings available on demand  |

## MECHANICAL DRAWING



| J3 Header - 11x2 |            |    |                |
|------------------|------------|----|----------------|
| Usage            | Pin Number |    | Usage          |
| Not in use       | 1          | 2  | Not in use     |
| Not in use       | 3          | 4  | Not in use     |
| Not in use       | 5          | 6  | Do Not Connect |
| GND              | 7          | 8  | PDM[0]         |
| PDM[1]           | 9          | 10 | PDM[2]         |
| PDM[3]           | 11         | 12 | PDM[4]         |
| PDM[5]           | 13         | 14 | PDM[6]         |
| PDM[7]           | 15         | 16 | PDM CLK1       |
| PDM CLK2         | 17         | 18 | Not in use     |
| GND              | 19         | 20 | GND            |
| 3V3              | 21         | 22 | 3V3            |

| J2 Header - 6x2 |            |    |            |
|-----------------|------------|----|------------|
| Usage           | Pin Number |    | Usage      |
| I2S LRCLK       | 1          | 2  | I2S BCLK   |
| GND             | 3          | 4  | I2S MCLK   |
| I2S Out0        | 5          | 6  | Not in use |
| I2C SCLK        | 7          | 8  | I2C SDA    |
| GND             | 9          | 10 | GND        |
| 12V+ IN         | 11         | 12 | 12V+ IN    |