

**JOYNED**

AUDIO.  
NETWORK.  
TECHNOLOGY.

# **MU16-OEM - USB MILAN Interface - Datasheet**

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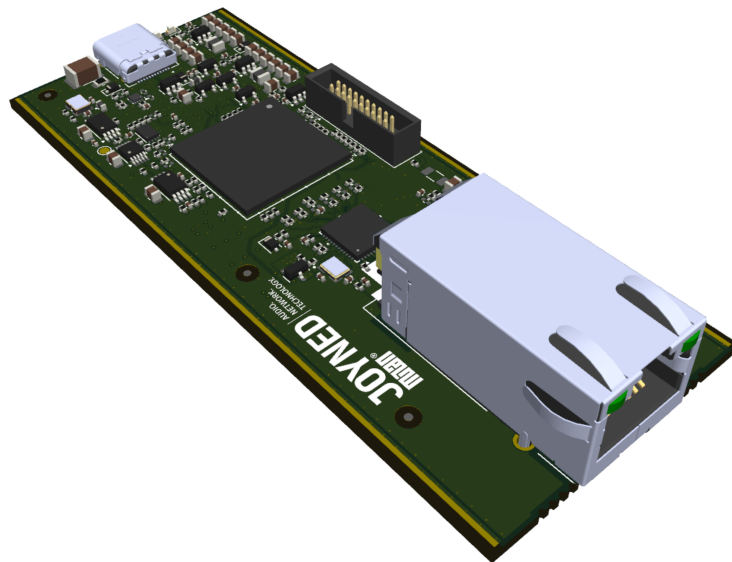
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## Brief

The Joyned MU16 bridges between USB Audio and Milan networks. Supported Sample rates cover 48kHz and 96kHz and the channel count ranges from 2x2 to 16x16 channels. **Up to 32x32 channels** can be supported at 48kHz. The network interface is fully Milan compliant. The USB interface is compliant with USB Audio 2.0.



## Overview

This module is provided as OEM solution to audio manufacturers who want to offer a solution for interfacing Milan networks with Windows-PCs and Macs. Recording, playback and soundcheck applications benefit from this plug and play solution.

### Powered by JOYNED XM2 - MILAN Software

JOYNED XM2 - MILAN Software, designed for XMOS microcontrollers, integrates smoothly with the Milan standard for audio over Ethernet. On the MU16 it supports up to 32x32 audio channels , stream

counts of 4x4, and sampling rates of up to 96 kHz. Whether for **live sound, studio production, or commercial installations**, the JOYNED Software simplifies development, bringing network technology to more places.

## Dimensions

100 mm x 40 mm

## Features

- Sample rates: 48kHz and 96kHz
- Channel count: 2x2 or 16x16, up to 32x32 at 48kHz.
- Milan and USB Audio 2.0 compliant
- RJ45 and USB-C connector
- Powered from USB-C

Customized enclosures and drivers can be offered.

## Product Details

### JOYNED XM2 - MILAN Software

- Full Milan compliance for professional audio over Ethernet.
- On the MU16 up to **32x32 audio channels** and **4x4 streams** are supported.
- Compatible with **sampling rates of 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz**.
- Simplified integration process with XMOS microcontrollers, ensuring a reliable and solid foundation.
- Functional verification support provided by JOYNED for meeting all professional standards.

### Microcontroller

- **XMOS xCORE-200 XE232**: A high-performance, 32-core microcontroller designed for time-sensitive applications:
  - Quad 32-bit RISC cores running at up to 500 MHz.
  - Deterministic execution for precise timing.
  - Integrated support for networking, I/O, and control applications.[Learn more about the xCORE-200 XE232<sup>1</sup>](https://www.xmos.com/xcore-200).

### Clock Recovery (PLL)

Cirrus Logic CS2501 for low-jitter clock recovery, ensuring high-precision synchronization.  
[Learn more about the CS2501 PLL<sup>2</sup>](#).

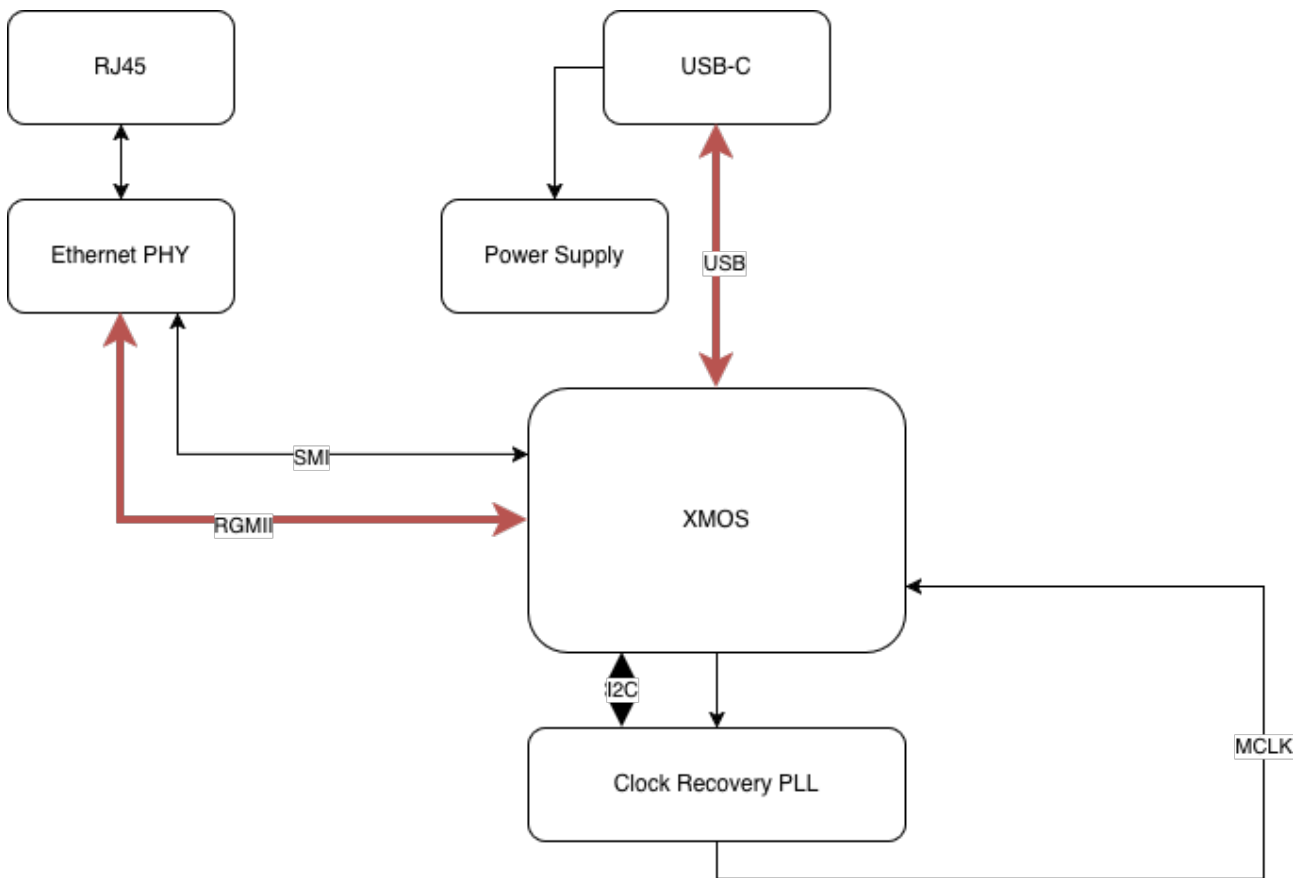
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1. <https://www.xmos.com/xcore-200>

### Ethernet PHY

Microchip KSZ9131 for reliable transmission and reception of Ethernet Data.

### Block Diagram



### Mechanical drawing

2. <https://www.cirrus.com/products/cs2501/>

