JOYNED
AUDIO.
NETWORK.
TECHNOLOGY.

AS1-EVK - Evaluation Kit for AVB Switch Software - Datasheet

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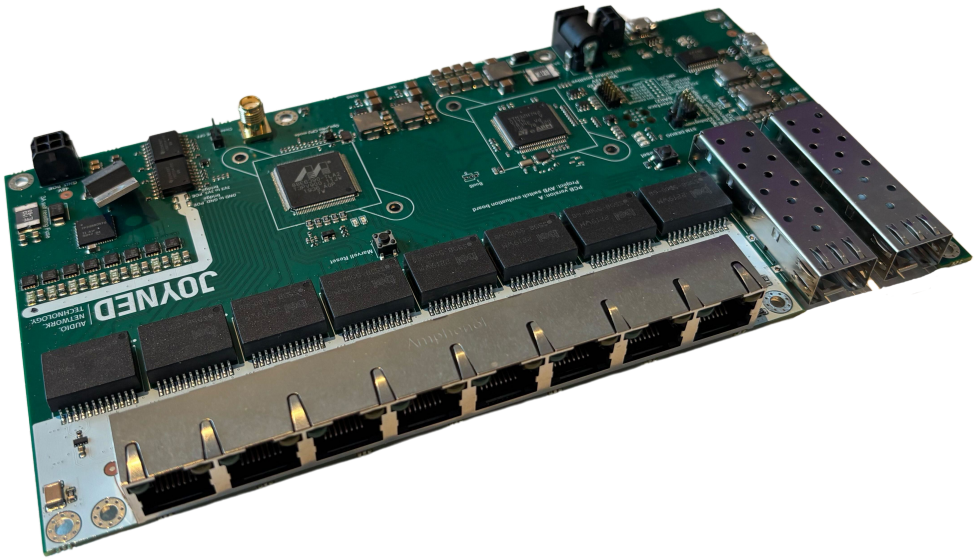
Brief

The AS1-EVK is a 10-port Ethernet switch optimized for audio and video networking. Featuring AVB and TSN standards, it includes eight RJ45 ports (100 Mbit/s and 1 Gbit/s PoE) and two SFP cages for fiber or copper connections. Powered by JOYNED's AVB software stack, it ensures seamless integration, Avnu certification support, and robust performance for live sound, studio production, and commercial AV installations.



Overview

The AS1-EVK is a 10-port Ethernet switch engineered for audio and video networking. It integrates Audio Video Bridging (AVB) and Time-Sensitive Networking (TSN) standards for deterministic, low-latency data transmission. Eight ports feature RJ45 connectors supporting 100 Mbit/s and 1 Gbit/s Ethernet with Power over Ethernet (PoE), while two additional ports are equipped with SFP cages for modular fiber or copper connections.

This switch is ideal for time-critical AV installations, such as live sound, studio production, and commercial AV installations.

Powered by JOYNED Software

JOYNED AS1-AVB switch software for Marvell, designed for platform independent use, integrates seamlessly with AVB/TSN and Milan networks. Supported platforms include Marvell switch silicon and ARM microcontrollers, as well as a variety of operating systems including Linux. Whether for live sound, studio production, or commercial installations, JOYNED software simplifies development, bringing network technology to more places.

JOYNED AS1-AVB switch software for Marvell can be licensed. Learn more at JOYNED's website[1].

Dimensions

200 mm x 105 mm.

The board is designed to fit into a 9.5" / 1RU enclosure.

Product Details

- **Switch Silicon:**
  - **Marvell 88E6390**: A high-performance Ethernet switch IC with advanced features:
    - 11-port non-blocking architecture with eight 10/100/1000 Mbps Ethernet PHYs.
    - Two SFP ports supporting 2.5 Gbps or 1 Gbps uplinks.
    - IEEE 802.1 AVB and TSN standards support, including precise timing protocols, low-latency traffic shaping, and stream reservation (SRP).
- **Host Microcontroller:**
  - **STM32H742**: A high-performance microcontroller based on a dual-core Arm Cortex-M7 and M4 architecture with key features:
    - Up to 550 MHz CPU speed for real-time data processing.
    - Integrated peripherals for networking, debugging, and power management.
    - High memory capacity and advanced security features.
      More details available on the STM32H742 product page[2].
- **JOYNED AS1-AVB switch software for Marvell:**
  - **Comprehensive Protocol Support:** Includes IEEE 802.1BA (AVB), IEEE 802.1AS (gPTP), IEEE 802.1Q (MVRP, MSRP, VLAN), and IEEE 802.1D/s/w (RSTP).
  - **Platform Independence:** Runs on Linux using pthreads/sockets or bare-metal systems with RTOS such as FreeRTOS or uC/OS.
  - **Switch Fabric Independence:** Compatible with Marvell switch ICs, including the 88E6390, via an adaptation layer.
  - **Optimized for Performance:** Efficient memory allocation, CPU traffic protection, and compliance with Avnu/Milan standards.
  - **Application Interface:** Enables runtime configuration, advanced logging, and clock relationship management between the system clock, fabric clock, and grandmaster (GM) clock.

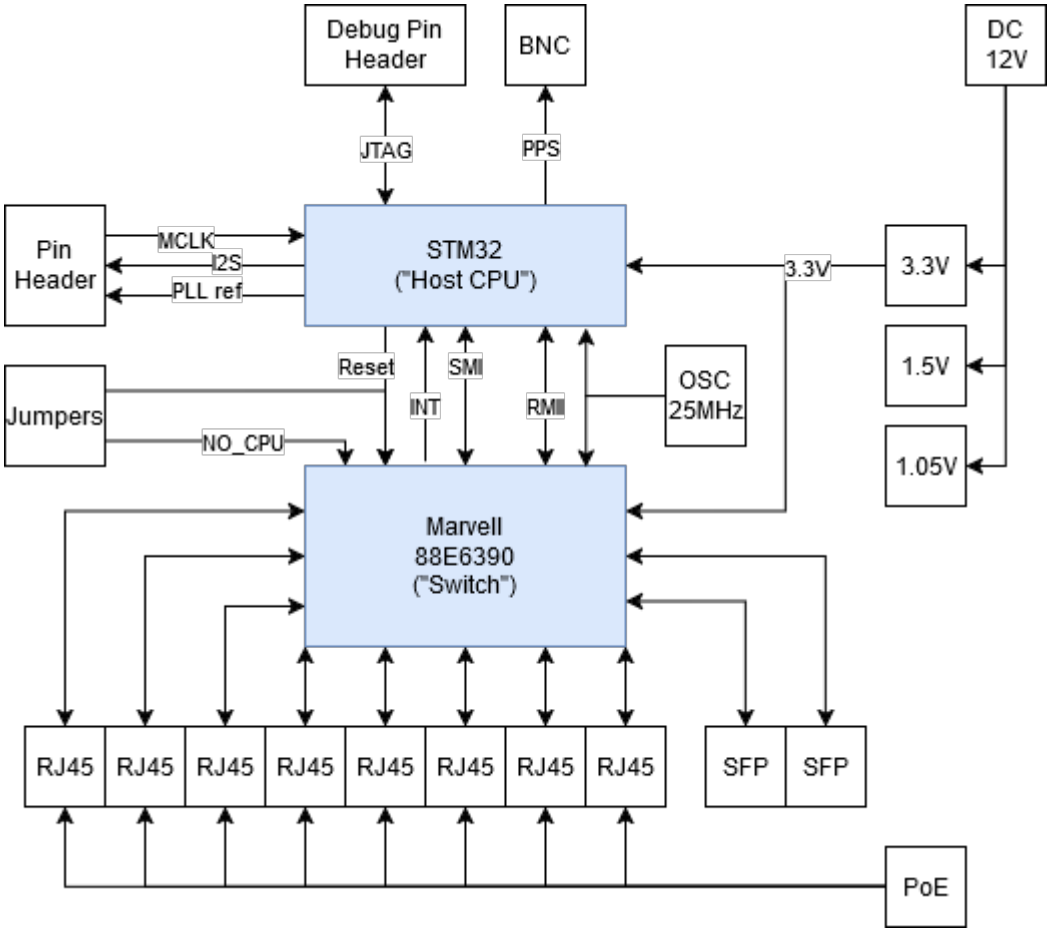
Features

- **Port Configuration:**
  - **8 x RJ45 Ports:** Supporting 100 Mbit/s and 1 Gbit/s speeds with PoE capability.
  - **2 x SFP Ports:** For high-speed modular connections.
- **Monitoring and Debugging:**
  - **USB Interface:** Accessible on the rear panel for system monitoring.
  - **1PPS Signal Output:** Internally accessible for precise network time synchronization analysis.

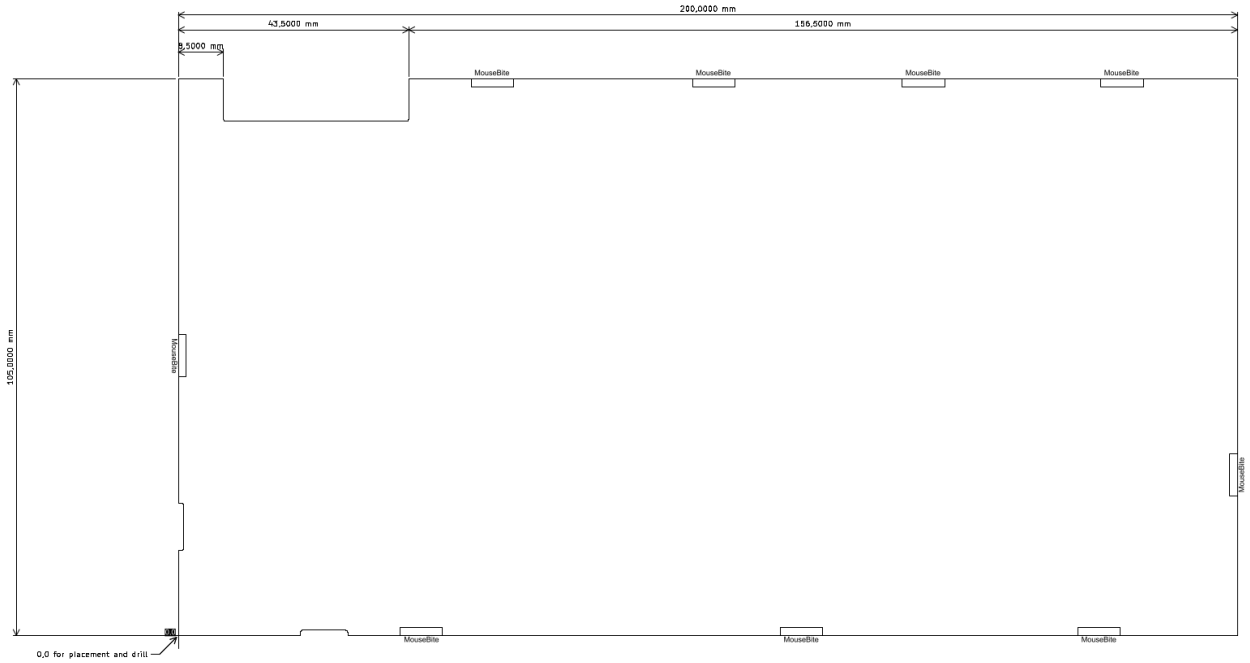
1. https://www.joyned.at/milan-switch-for-arm
2. https://www.st.com/en/microcontrollers-microprocessors/stm32h742.html

- **Power Supply Requirements:**
  - The unit operates on a standard 12V DC input.
  - **Important Note:** An additional power supply is required to utilize the PoE feature on the RJ45 ports.
- **Standards Compliance:** Full support for IEEE 802.1 AVB/TSN for time-sensitive traffic.
- **Performance:** High-speed, non-blocking architecture ensures low-latency data delivery.
- **Compact Design:** Suitable for rack-mounted installations with minimal footprint. Form Factor designed to fit into 9.5” / 1RU enclosure.

Block diagram



Mechanical Drawing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