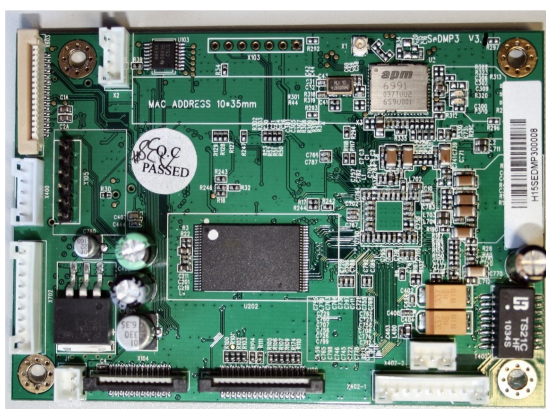


# SeDMP3

## OEM Integration Manual



Revision: v1.1  
HW-Rev: v3.1  
FCC-ID: ZUCSEDMP3  
Date: 2011-10-24  
Author: Andreas Rumpler

### **Audio GmbH**

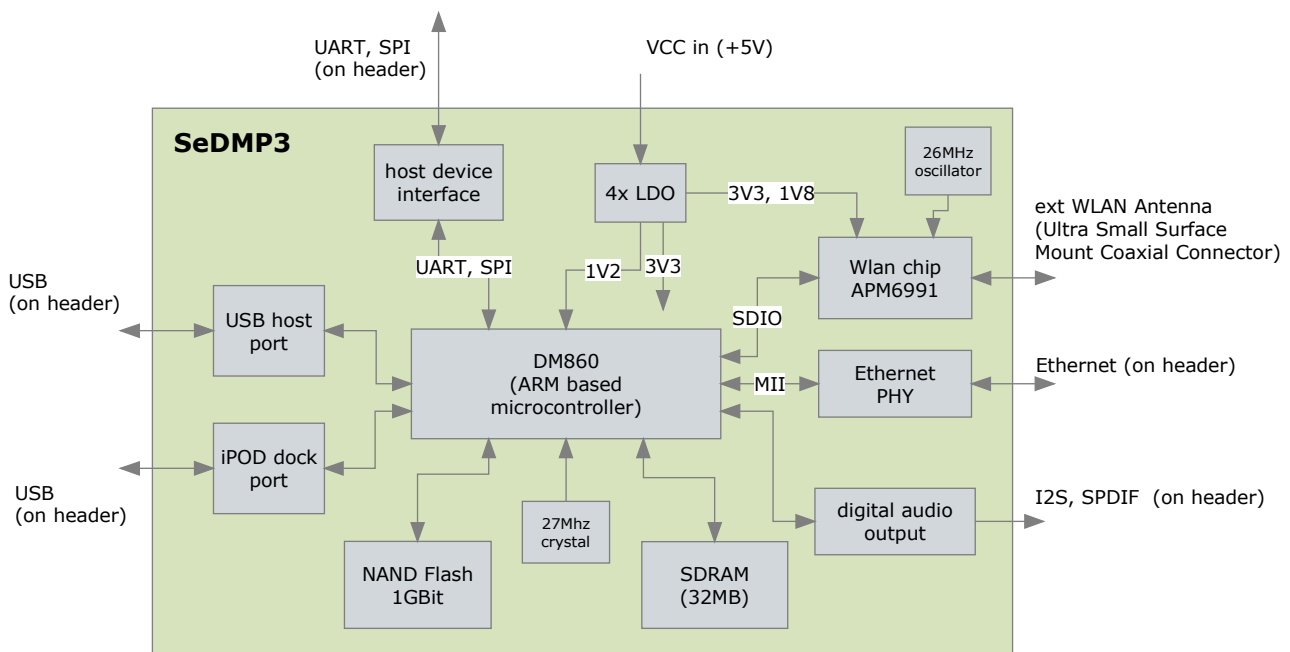
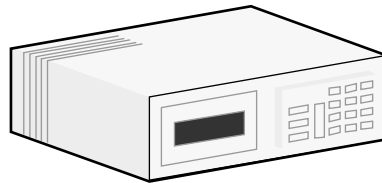
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## 1. Overview

The Audivo SeDMP3 module allows manufacturers of HiFi equipment to enhance their products by state of the art audio streaming capabilities.

HiFi Device using SeDMP3 as a module



The SeDMP3 offers:

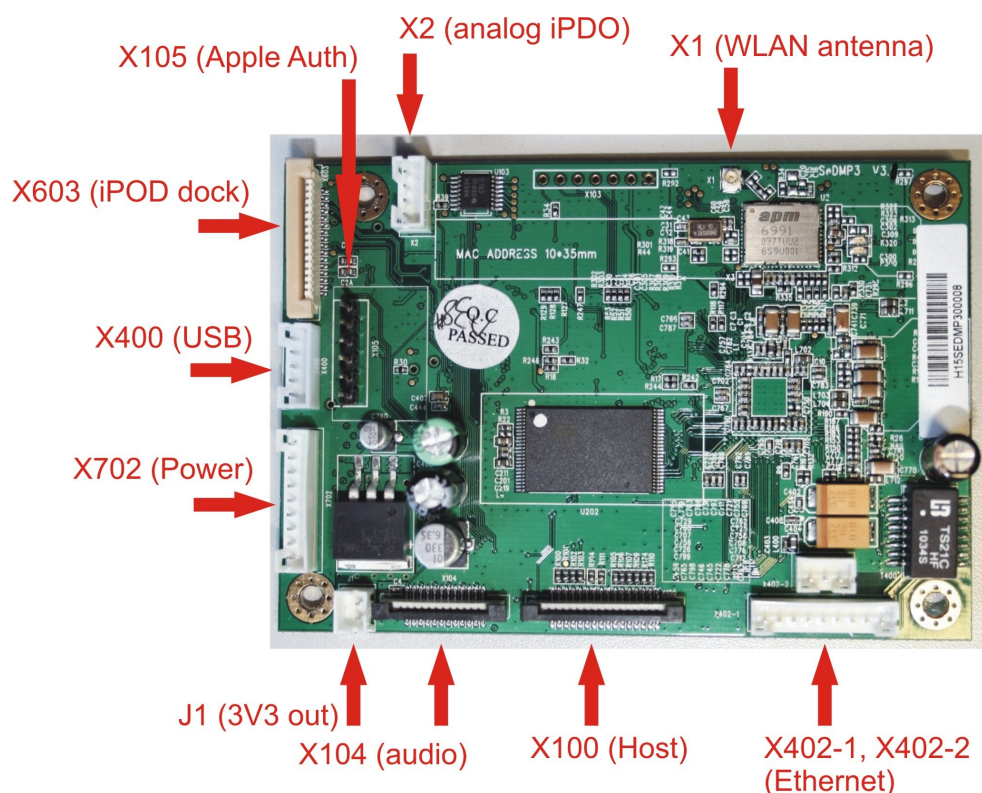
- USB 2.0 High-speed host port for audio playback from USB mass storage and Apple iPod/iPhone devices
- Ethernet and WLAN Interface for access to LAN and WWW:
  - Ethernet with 10/100MBit/s
  - DHCP, Auto-IP and manual IP configuration
  - WLAN: IEEE 802.11b, g and n-mode, 2.4GHz only, single stream modes only for n-mode
- Audio playback from UPnP AV servers and online audio services (internet radio)

- Ability for remote control by UPnP Control Points and Apple devices (Apps)
- supported audio formats WAV, AIFF, MP3, WMA, OGG, FLAC, AAC, M4A; up to 32Bit/192kHz

SeDMP3 takes care about all required network and communications stacks involved. Basically the Host device, e.g. an AV Receiver, just takes care about rendering of the user interface and submission of user commands. The user interface information is provided in XML format over a SPI interface to the host system.

A limited set of parameters is provided to the host device for configuration of WLAN and network interfaces and to customize the user interface.

## 2. Connector specifications



### 2.1. WLAN antenna (X1)

Ultra Small Surface Mount Coaxial Connector (U.FL-R-SMT) for external WLAN antenna. Type "Hirose U.FL-R-SMT-1(10)".

An antenna with a gain of  $\leq 2.0$  dB must be used. Example of mating antenna: "Songtak AXX-001"

## 2.2. Power Supply (X702)

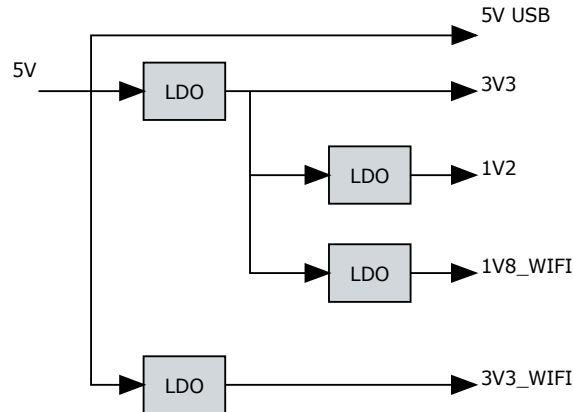
Connector Type: "Lonsid PH 2.0A-9A"

max. current per pin: 2.0A

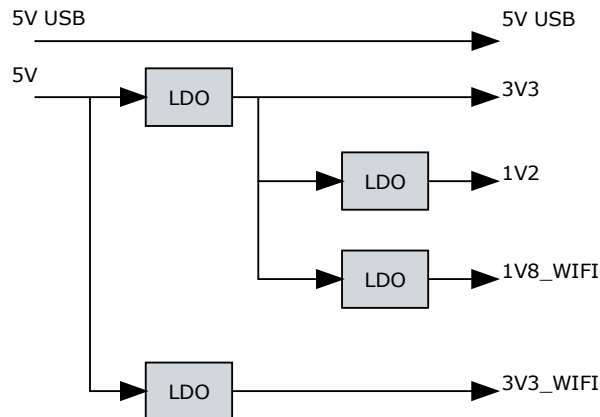
Pinning:

Pin	Name	Usage
1	-	reserved
2	-	
3	GND	GND connection of SeDMP3
4	GND	
5	GND	
6	5V input	Input for 5V power domain of SeDMP3. 5V is used to create 3V3 and 3V3_Wifi by LDOs. 1V2 and 1V8 (for Wifi) is created from 3V3 domain by LDOs.  Average current draw: 1.0A + current drawn by USB devices (max. 2x 1.0A)
7	5V input	
8	5V USB input	Separate input for power supply of attached USB devices. Current draw is up to 2.0A (1.0A for each USB device). The actually drawn current depends on the attached USB device.  By default this input is not used and USB devices are sourced by 5V input
9	5V USB input	

### 2.2.1. 5V only



### 2.2.2. 5V + 5V USB



## 2.3. Host Connection (X100)

Connector Type: "CNJS 1.0S-12-16PB, 1.0mm 间距 16pin"

Mating cable: Molex 98267-0321

Pinning:

Pin	Name	Usage
1	GND	GND connection
2	RXD0	UART0: Host → SeDMP
3	TXD0	UART0: SeDMP → Host
4	RXD1	UART1: Host → SeDMP
5	TXD1	UART1: SeDMP → Host
6	SPI_TOHOST	SPI MISO
7	GND	GND connection
8	SPI_CLK	SPI Clock
9	GND	GND connection

10	SPI_NCS	SPI Chip select
11	SPI_FROMHOST	SPI MOSI
12	NIREQ_HOST	Interrupt Request from SeDMP to Host
13	FACTORY_RST	Factory Reset: Set to high during start up to configure factory settings
14	NRESET	Reset input of SeDMP
15	POWER_DOWN	reserved
16	GND	GND connection

SeDMP is SPI slave. UART1 is used for debugging shell (Baud-rate 115200).

## 2.4. Audio (X104)

Connector Type: "CNJS 1.0S-12-12PB, 1.0mm 间距 12pin"

Mating cable: Molex 98267-0277

Pinning:

Pin	Name	Usage
1	MUTE	this pin is set by SeDMP to high to signal host, that audio output should be muted. This is used for example during reconfiguration of audio interface of SeDMP. This should avoid noise on audio outputs
2	GND	GND connection
3	AV2_LRCK	Word Clock of I2S output
4	GND	GND connection
5	AV2_CLK	Bit Clock of I2S output
6	GND	GND connection
7	AV2_MCK	Master Clock of I2S output
8	GND	GND connection
9	AV2DATA0	I2S Data output
10	GND	GND connection
11	SPDIF_OUT1	SPDIF output (3V)
12	GND	GND connection

SeDMP3 provides digital audio output with samplerates up to 192kHz by I2S and SPDIF interface. I2S uses left justified format. I2S interface uses master mode only. So all signals are outputs of SeDMP3.

## 2.5. Apple Auth Coprocessor (X105)

Connector Type: "2.54 间距,6Pin,CNT-M254-1\*6-GS-6/3" or "2510 系列 LD2510-6A"

"2510 系列 LD2510-6A" is compatible to Molex 22-29-2061

"2.54 间距,6Pin,CNT-M254-1\*6-GS-6/3" is compatible to Molex 90120-0766

Pinning:

Pin	Name	Usage
1	3V3	power supply of 3V3 for apple auth coprocessor
2	GND	GND connection
3	I2C_SCL	I2C clock
4	I2C_SDA	I2C data
5	NRESET_PER	reset signal for coprocessor
6	VIDEO_NIPOD_SEL	reserved

## 2.6. Ethernet 10/100MBit/s (X402-1, X402-2)

Connector Type: "Lonsid PH 2.0A-9A" and "Lonsid PH 2.0A-3A"

Pinning:

X402-1

Pin	Name	Usage
1	TX+	Ethernet TX+
2	TX-	Ethernet TX-
3	RX+	Ethernet RX+
4	CT	center
5	CT	center
6	RX-	Ethernet RX-
7	CT	center
8	CT	center
9	Shield	Shield of Ethernet

X402-2

Pin	Name	Usage
1	LED_LINKACT	LED signalling link status
2	3V3	power supply for LED
3	LED_SPEED	LED signalling speed status

## 2.7. iPOD dock (X603)

Connector Type: "Molex 1.0mm 间距 16pin"; current rating 1.0A.

Mating cable: Molex 98267-0321

Pinning:

Pin	Name	Usage
1	GND	GND connection
2	GND	GND connection
3	USB_D+	USB host interface D+
4	USB_D-	USB host interface D-
5	USB_PWR	USB power supply for device 5V0
6	ACCESS_ID	pin used by iPOD to detect type of accessory
7	GND	GND connection
8	GND	GND connection
9	RX_TO_IPOD	reserved



10	TX_FROM_IPOD	reserved
11	ACCESS_DETECT	this pin is connected to GND by SeDMP3 to signal an attached accessory to iPod
12	LINE_OUT_L	reserved
13	LINE_OUT_R	reserved
14	AUDIO_RETURN	reserved
15	IPOD_NDETECT	this pin needs to be connected to GND by iPod or any other device to switch USB host port to X603
16	Chassis	GND connection

## 2.8. USB (X400)

Connector Type: "Lonsid PH 2.0A-5A"; current rating 2.0A

Pinning:

Pin	Name	Usage
1	USB power	5V0 supply for USB device, max. current 1A
2	USB D-	USB host D- signal
3	USB D+	USB host D+ signal
4	GND	GND connection
5	shield	shield for USB cable

An USB device may draw up to 1.0A.

USB host port is shared between X603 and X400. Status of Pin IPOD\_NDETECT on X603 defines which USB port is in use.

## 2.9. 3V3 power supply output (J1)

Connector Type: "Lonsid PH 2.0A-2A"; current rating 2.0A

Pinning:

Pin	Name	Usage
1	3V3	3V3 voltage output; can be used by host device
2	GND	GND connection

Current Draw must not exceed 300mA.

### 3. Operating Conditions

	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Units</b>
Operating temperature	0	+25	+70	°C
Power Supply 5V and 5V USB (1)	5.0		5.5	V
Input High Voltage	1.7		5.5	V
Input Low Voltage	-0.3		0.7	V
Output High Voltage	2.4			V
Output Low Voltage			0.4	V

(1). The minimum Input voltage for 5V and 5V USB must be chosen in order to achieve the minimum required voltage for an attached iPOD, when it is charged by 1.0A. Refer to Apple MFI documentation for details.

### 4. FCC Compliance Statement

The following phrases need to be included in the final users manual of the end product:

#### Section 15.19

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:  
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Section 15.21 Information to user

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### 5. FCC labeling of device

A device that contains SeDMP3 board must be labeled with a sign that refers to the used modular transmitter (=SeDMP3). The wording must be:

**"Contains Transmitter Module FCC ID: ZUCSEDMP3"**