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HERMES DDC

OWNER'S MANUAL

V2.0
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Contents

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1. INSTALLATION & SAFETY INSTRUCTIONS

This DDC is designed and built to provide trouble-free performance, but as with all electronic devices it is necessary to observe a few precautions:

- Unpack the DDC carefully.

- Position the DDC on a stable, horizontal surface, i.e. sturdy rack.

- The DDC supports voltage 100-250VAC worldwide voltage. Please connect the AC power cord with earth(ground) pin unless it is absolutely required to reduce hum from the ground loops of the connected devices.

- Always ensure that when disconnecting and reconnecting your audio equipment the mains supply is turned off.

- Position the power cord and signal interconnects where they are not likely cause trip and fall hazard.

- Do not use the DDC near water, or place water-filled containers on the DDC. Entry of liquid into the DDC is hazardous and may cause electric shock and/or fire hazard.

- Do not place the unit under direct sunlight or heat source.

- Do not remove any covers or try to gain access to the inside. There are no user adjustments or fuses to change without qualification.

- Clean regularly with a damp soft cloth. Do not use any cleaning agents as it might damage the surface finishing.

- The electronics in modern hi-fi equipment is complex and may, therefore, be adversely affected or damaged by lightning. For protection of the audio system during electrical storms, disconnect the mains plugs.

2. INTRODUCTION

Thank you for purchasing the DENAFRIPS HERMES DDC. It is a state-of-the-art Digital to Digital Converter, one of the finest available on the market.

The flagship DDC, built upon the success of the DENAFRIPS Digital Know-How. HERMES DDC isolates and buffers the digital signal, re-clock them via the local OCXO. The cleansed, ultra-low jitters digital output can be connected to any external DAC. It is *the answer* to the Digital Audio System. The top-quality performance of the HERMES DDC is for the serious audiophile who seek the very last bit of ultimate refinement.

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3. DESIGN HIGHLIGHTS

3.1 DIGITAL ISOLATION

The HERMES Digital Signals are completely isolated by the 50-Mbps high speed photocouplers. The optical isolation yields even lowered noise-floor and achieved high signal to noise ratio.

3.2 OVEN-CONTROLLED CRYSTAL OSCILLATOR – OCXO

The HERMES is equipped with dual OCXO operating at audio frequencies 45.1584Mhz, 49.152Mhz. Encapsulated in a metal casing, located at the centre of the DDC, these OCXO are specially designed for high-end audio applications with ultra-low phase-noise and ultra-accuracy. The dual OCXO are powered by the o-core transformer, supplying constant current to the OCXO. The adequate power reserves ensure the superior linearity and stability of the OCXO.

3.3 ADAPTIVE FIFO BUFFER RECLOCKING

The DENAFRIPS approach to address the jitters issue by FIFO BUFFER RECLOCKING. The adaptive FIFO buffer store the source digital audio data in the memory. These data are read from the memory using the ultra-low phase noise, ultra-accuracy OCXO, located right in the DDC.

This technology is close to the perfection, especially so with the local OCXO. The jitter is so small that it can be neglected.

3.4 PROPRIETARY, STATE-OF-THE-ART USB INTERFACE

The HERMES is equipped with the proprietary USB Audio Solution, powered by STM32F446 Advanced AMR Based MCU. DENAFRIPS redesigned and optimized circuitry, allow the DDC to be used as high-end DDC with computers / streamers. It supports 24bit/768kHz PCM data stream, and native processing of DSD up to DSD512. It comes with licensed THESYCON USB Driver for Windows Platform.

NOTE: The USB Module is designed to trigger on *only* when USB Input is selected. This is intended design to reduce digital input interfaces cross-interference for best sound reproduction.

3.5 PROPRIETARY SPDIF DIGITAL AUDIO RECEIVER

The SPDIF Coaxial, Optical, AES/EBU input support up to 24bit/192kHz digital audio format. The HERMES abandon the use of Digital Audio Receiver chip. The digital data is decoded by the on-board FPGA (Field Programmable Gate Array), signal path is shortened and eliminated the undesirable coloration.

3.6 DDC ARCHITECTURE

DIGITAL SIGNAL PROCESSING – All digital input data are stored in the on-board FPGA high-speed RAM.

OCXO – These data are read from the memory using the ultra-low phase noise, super accurate OCXO, located right in the DDC. The processed data are sent to the digital outputs.

DIGITAL OUTPUTS – The cleansed, ultra-low jitters data are output via multiple digital output interfaces simultaneously to the external DAC.

3.7 CLOCK IN

The HERMES supports clock in of audio frequencies 45.1584Mhz, 49.152Mhz. It makes a perfect companion with the *TERMINATOR-II or TERMINATOR-PLUS* to synchronize the CLOCKS.

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4. OPERATING INSTRUCTION

4.1   Quick Start Guide

Figure 1.   Front Panel

(1) Setup Button

Press the setup button once to enter configuration mode. In configuration mode, user may enable/disable the CLOCK-IN feature.

- Press Setup button once (enter config mode)
- Press OPT button twice
- CLOCK light should be on/off as the OPT button is pressed momentarily
- CLOCK light on = Enable clock in
- CLOCK light off = Disable clock in
- To confirm the setting, press Setup button once to save and exit config mode

(2) Input Selection Button

Press the following button to select the desire input to use with the HERMES DDC.

a.   USB
b.   OPT
c.   AES
d.   COAX

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(3) Digital Audio Signal Input Sampling Rate

The following table illustrate the Input Sampling Rate LED status.

Base Sampling Rate	Indicator	Input Format
44.1 kHz	44.1K	44.1 kHz
	88.2K	88.2 kHz
	176.4K	176.4 kHz
	352.8K	352.8 kHz
	705.6K	705.6 kHz
48 kHz	48K	48 kHz
	96K	96 kHz
	192K	192 kHz
	384K	384 kHz
	768K	768 kHz
DSD	64	DSD 64
	128	DSD 128
	256	DSD 256
	512	DSD 512

Table 1.   Sampling Rate

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Parameter Settings:

(1) I²S Pinout Configuration

1. Press the Setup button once to enter configuration mode
2. Press the COAX button momentarily, 48K 96K 192K LED will turn on/off in a fixed pattern to denote binary 000-111
3. Press the Setup button once to confirm the setting and exit configuration mode

	LED				I2S PINOUT						
	48K	96K	192K		PIN	DATA		BCK		LRCK	
MODE	DATA	BCK	LRCK		MODE	1	3	4	6	7	9
0	0	0	0		0	DATA-	DATA+	BCK+	BCK-	LRCK-	LRCK+
1	1	0	0		1	DATA+	DATA-	BCK+	BCK-	LRCK-	LRCK+
2	0	1	0		2	DATA-	DATA+	BCK-	BCK+	LRCK-	LRCK+
3	1	1	0		3	DATA+	DATA-	BCK-	BCK+	LRCK-	LRCK+
4	0	0	1		4	DATA-	DATA+	BCK+	BCK-	LRCK+	LRCK-
5	1	0	1		5	DATA+	DATA-	BCK+	BCK-	LRCK+	LRCK-
6	0	1	1		6	DATA-	DATA+	BCK-	BCK+	LRCK+	LRCK-
7	1	1	1		7	DATA+	DATA-	BCK-	BCK+	LRCK+	LRCK-

Table 2.   I2S PINOUT CONFIGURATION

*Figure 2.   Rear Panel*

Description:

(1) AC Power Supply

CAUTION! HERMES supports worldwide AC mains, range from 100-250VAC. The Please use a good quality power cord with earth/ground pin connected.

(2) Digital Input Interface

There are 4 Digital Input Interfaces, namely, COAX, AES/EBU, OPT, USB.

(3) Digital Output Interface

There are 6 Digital Output Interfaces, namely, COAX, AES1, AES2, OPT, I2S-A, I2S-C. All outputs are active simultaneously.

I2S-A HDMI (LVDS)	I2S-C RJ45 (LVCMOS)
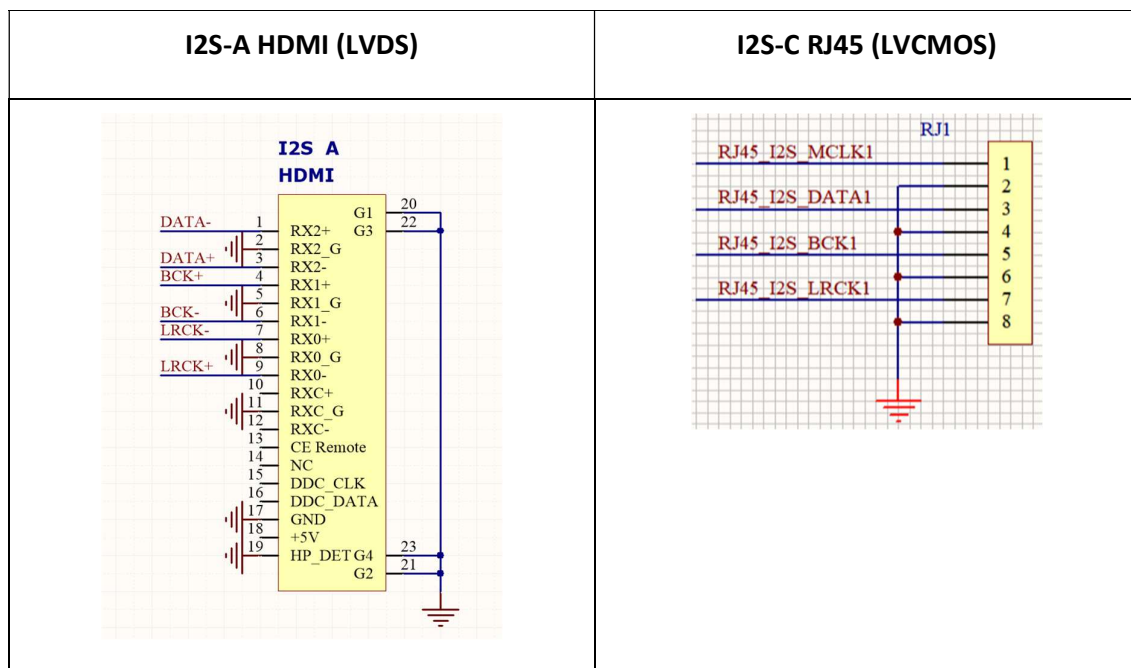
(4) CLOCK IN

The HERMES supports the following clock frequencies input, leveraging the high-quality OCXO of the *TERMINATOR-II* or *TERMINATOR-PLUS* DAC, it may be connected to HERMES CLOCK-IN to improve the sonic performance.

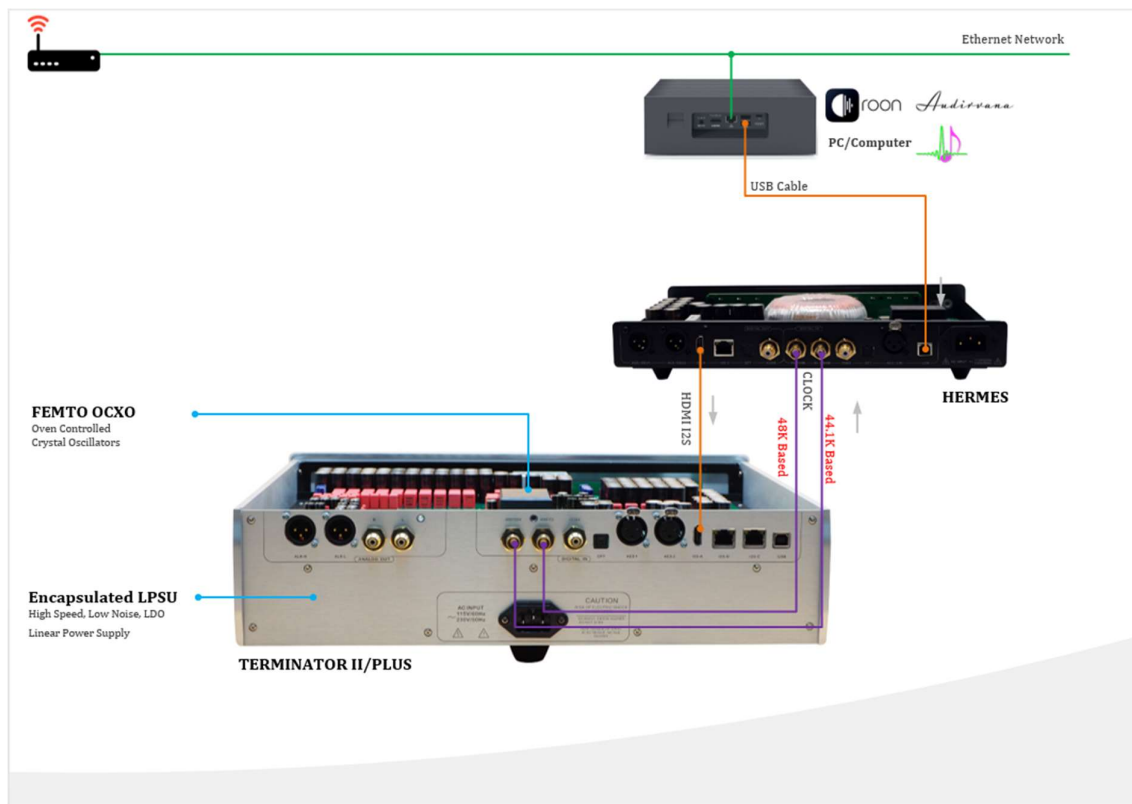**MASTER CLOCK**

- 45.1548MHz, 49.152Mhz

Use Case Example:

Table 3.   Use case examples of HERMES CLOCK IN

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4.2 USB DRIVER INSTALLATION – WINDOWS OS

USB driver is required for Windows Operating System (Windows 7/8/8.1/10, X86/X64). The USB driver is licensed by THESYCON to provide the highest quality audio playback for Computer Audio System.

NOTE: Mac and Linux OS do not require the USB driver.

Installation Guide:

- Download the driver from the support page: https://www.denafrips.com/support
- Do not connect the USB cable from the computer to the DDC. Remove it before the USB driver installation
- Double click the "DENAFRIPS_UsbAudio_v4.82.0" (or the latest version) to install the USB driver.
- Follow the on-screen instruction to complete the installation
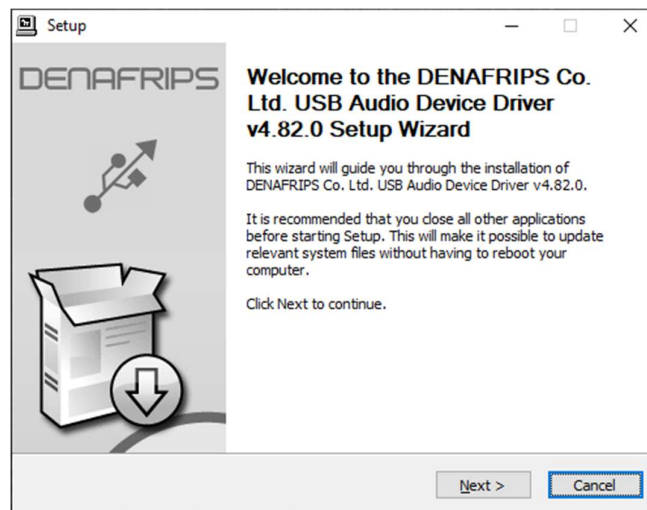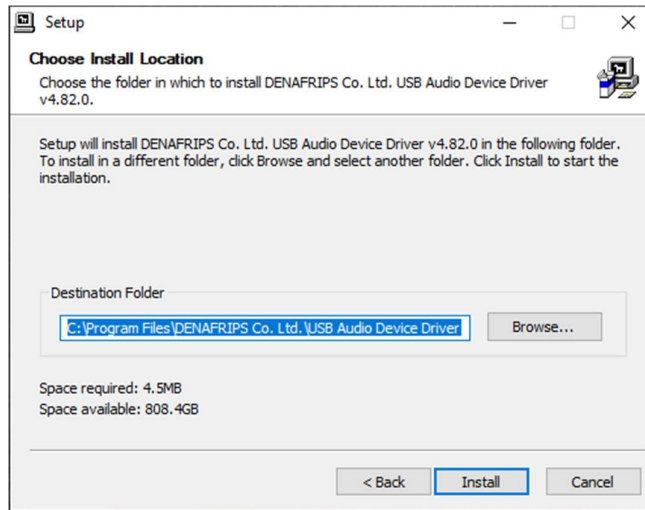

Figure 3.   Welcome screen

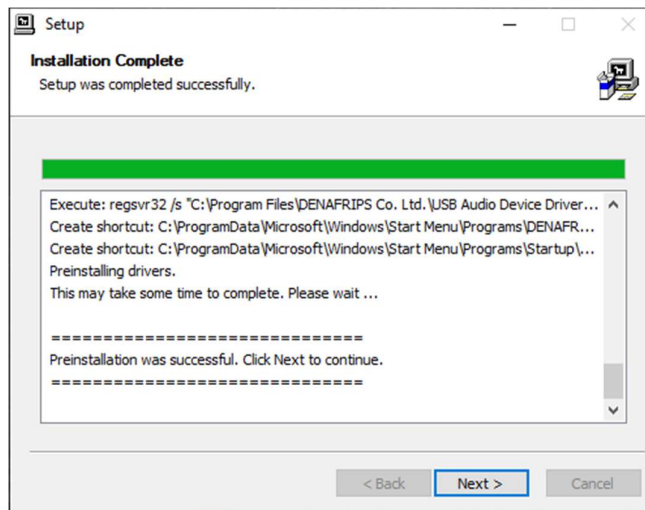*Figure 4.   Default Installation Directory*

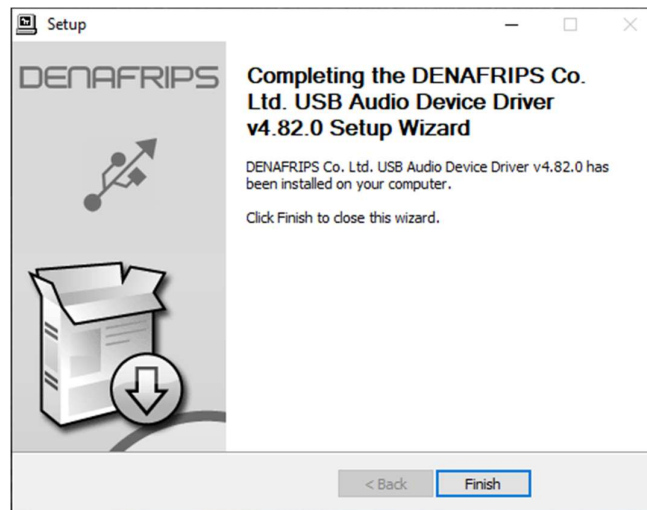*Figure 5.   Preinstallation Successful*

Figure 6.   Completed

- Restart the computer to complete the installation
- Connect the USB cable to the DDC
- Power on the DDC. Select USB input
- The USB DDC shall be detected. The driver status can be monitored as follows
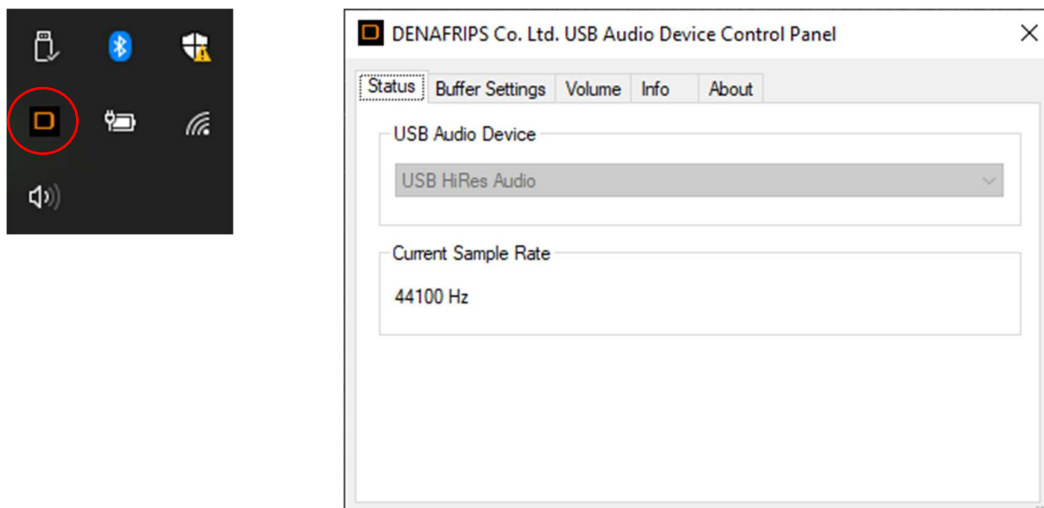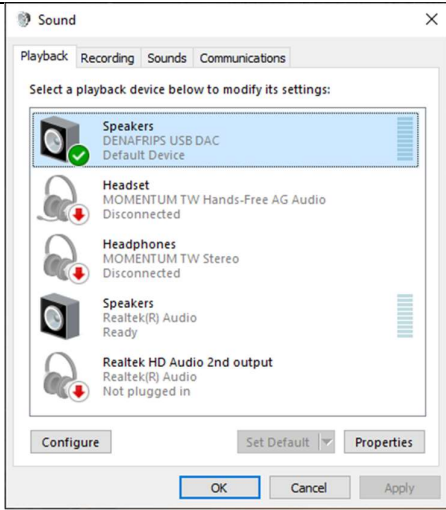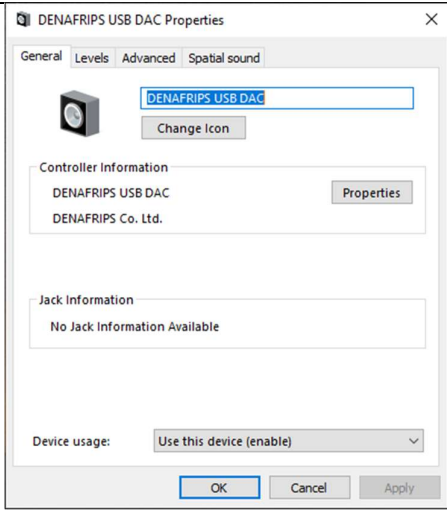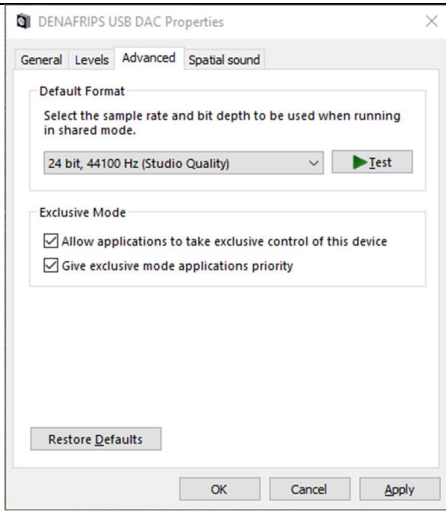

Figure 7.   Taskbar & Control Panel

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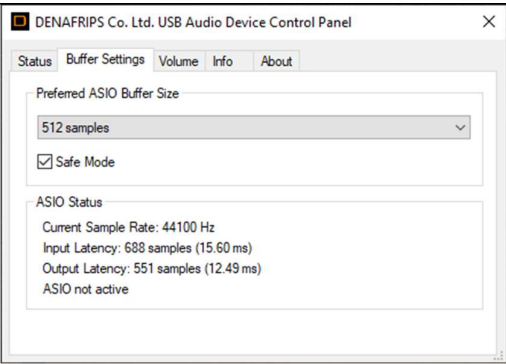
- Select DENAFRIPS USB DDC as default Windows OS Soundcard

Press Set Default button	Properties of the DENAFRIPS USB DDC
Direct-Sound default format	ASIO Buffer Size

Playback software recommendation:

- roon
- JRiver
- Foobar2000
- Sonicstudio Amarra

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5. SPECIFICATIONS

Description	Parameters
AC Power	Worldwide AC Power Supported 110 - 230V, 50/60Hz In 110VAC mains, the min voltage ranges from 92V to max 126V In 230VAC mains, the min voltage ranges from 184V to max 253V
Power Consumption	< 30W
Digital Input	Coax SPDIF via RCA TOSLink x 1 AES/EBU x 1 USB
External Clock Input	45.1584MHz 49.152Mhz
Digital Output	Coax SPDIF via RCA TOSLink x 1 AES/EBU x 2 I²S HDMI LVDS Standard I²S RJ45 LVCMOS Standard
Supported Format (DSD)	DSD64 All Input DSD64 – DSD512 USB & I²S Only
Supported Format (PCM)	24bit/44.1, 48, 88.2, 96, 176.4, 192 kHz All Input 44.1 – 768 kHz on USB & 44.1 – 384kHz on I²S Only
Dimension	330W x 240D x 50H mm (Feet +18mm)
Weight	6.0kg

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6. WARRANTY

DENAFRIPS HERMES purchased from the Authorized Distributor comes with 36 months of warranty from the date of purchase / delivery (whichever later).

Defective Within	Warranty Policy
First 30 Days	DENAFRIPS to bear both way shipping fee.
Within 1st Year	Customer to bear one-way shipping fee. DENAFRIPS shall cover the return shipping fee.
Within Warranty Period	Customer to bear both way shipping fee. DENAFRIPS to repair at free of charge.
Out of Warranty	Customer to bear both way shipping cost. DENAFRIPS to provide repair / maintenance services at cost.