



## Overview

The HDSPe MADI is RME's both inexpensive and outstanding PCI Express card with MADI interface. HDSPe MADI is based on the award-winning HDSP MADI card, and represents the new top model of this world-wide successful card line.

The PCI Express card consequently uses all advantages of the MADI format, the professionals' multi-channel audio interface, offering 64 channels of 24-bit audio at a sample rate of up to 48 kHz, 32 channels at up to 96 kHz and 16 channels at up to 192 kHz. Transmission is done via a single line, either coaxial with BNC plugs or by fiber cable. In both cases more than 100 m cable length can be achieved.

Compared with the HDSP MADI (Standard PCI version), the express card offers some new features: Support of higher samplerates than 96 kHz, more features in TotalMix (phase and internal loopback per channel, +6 dB gain for the hardware outputs), and the direct support of the Time Code Option. HDSPe MADI provides even lower latencies, making the card the perfect partner for live recording and live mixing applications. The analog monitor output is equipped with the low-latency converter technology of the ADI-8 QS, thus guaranteeing stunning SNR and THD values too.

HDSPe MADI is fully compatible to all devices with MADI interface. In combination with the ADI-648 an 8 x ADAT optical PC interface is realized, unbeatable in price and performance. With the ADI-6432 a bidirectional AES/EBU frontend with 64 channels is available.

On a powerful PC/Mac three HDSPe MADI can be used in a combination, providing 192 inputs and 192 outputs on a single workstation simultaneously.

## Connectivity

- 1 x MADI I/O (optical and coaxial)
- 2 x MIDI I/O
- Stereo Analog Out
- Word Clock I/O
- optional: HDSP TCO

## Features

- MADI Multinorm
- MADI Dual I/O
- MIDI über MADI
- Instant Memory
- Intelligent Clock Control
- TotalMix™
- RME Remote
- SteadyClock™
- SyncCheck™
- QuickBoot
- MeterBridge
- DigiCheck
- ZLM™
- MultiSync
- Redundancy

## Features

Hammerfall DSP MADI offers full support for 56 and 64 channel modes and double and single wire technology (96k frame) for 96 kHz. Full 64 channel support can also be found in the hardware mixer TotalMix. All 64 inputs and 64 playback channels can be routed and mixed to 64 physical outputs completely freely, which translates to a 8192 channel mixer. With that, Hammerfall DSP MADI offers the most powerful router/mixer ever implemented on a PCI card, and allows much more than a usage as pure computer I/O unit:

- MADI optical patchbay and router
- MADI coaxial/optical or vice versa converter and splitter
- MADI redistributor, patchbay and router

TotalMix can be completely remote controlled via MIDI. Furthermore, the hardware delivers RMS and peak level meters for full control over 192 audio channels at minimal CPU load. While most MADI-based devices require an additional word clock or AES line, the Hammerfall DSP MADI (like the ADI-648) uses SteadyClock(TM) to extract the reference clock at lowest jitter directly from the MADI signal, making long-distance connections even more convenient.

As usual with RME, Hammerfall DSP MADI offers further sensible features. For instance an analog 24-Bit/96kHz line/headphone output with 110 dB dynamic range for direct control of all input and output signals.

The included expansion board carries word clock I/O (BNC) and MIDI I/O. The word clock input is galvanically isolated via transformer and operates on both single and double speed signals automatically. MIDI I/O offers two completely independent MIDI inputs and outputs via breakout cable (4 DIN sockets). A virtual MIDI port allows for a direct transmission of MIDI data over MADI.

RME uses a configuration memory for the most important settings of the card. Instead of operating in a default mode on computer power-up until loading the driver, HDSPe MADI activates the last used sample rate, master/slave configuration and MADI format immediately when switched on. This eliminates disturbing noises and clock network problems during power-up or re-boot of the computer.

Included software:

- DIGICheck for Windows: Spectral Analyser, professional level meter for 2, 8, or 64 channels, Vector Audio Scope, various other audio analysis tools.
- Drivers: Windows 2000/XP/Vista/64 (full ASIO multi-client operation of MME, GSIF 2.0 and ASIO 2.0, WDM), Mac OS X PPC and Intel (Core Audio and Core MIDI).

The card is not based on a PCI to PCI Express bridge, which would simply add PCIe to existing PCI technology. It is a newly developed genuine PCI Express solution, which consequently takes full advantage of the new format, achieving significant performance gains in multitrack audio.

Thanks to RME's flash update technology, future firmware improvements, adjustments, and bugfixes can be installed easily at any time.

The PCI Express interface of the HDSP system is based on the PCI Express Base Specification v 1.1. It represents a 1-Lane PCI Express Endpoint Device and supports 2.5 Gbps line speed. Thanks to the packet-based full duplex communication, the card provides a transfer rate of up to 500 MB/s - 250 MB/s in every direction.

## Settings

Just click on the hammer symbol in the systray of the taskbar and the settings dialog of the HDSP MADI comes up. The clear structured, easy to understand window plus the unique informative status windows for input signal, clock mode and sample rate make your work with Hammerfall DSP to a real pleasure.

When working with several digital sources it is not only necessary to know if these are properly locked, but also if they are totally synchronized. RME's exclusive SyncCheck® checks all input signals and displays their actual state, and thanks to our new Intelligent Clock Control (ICC) concept you have all clocks and states under control - with ease.

SteadyClock(TM), RME's unique sync and clock technology allows the HDSP MADI to control the sample rate freely on its own. The settings dialog includes a direct choice of the video and audio world's most often used sample rates. Additionally, two faders can be used to set the sample rate freely and in real-time, within the range of +/- 4% and +/- 0.4%.

Up to 3 HDSPe MADI and HDSP AES-32 can be used simultaneously. With this up to 192 inputs and 192 outputs are available at 48 kHz, 96 inputs and 96 outputs at 96 kHz.



## Tech Specs

1-Lane PCI Express Endpoint device (no PCI Express to PCI Bridge)

2.5 Gbps line speed

Packet-based full-duplex communication (up to 500 MB/s transfer rate)

All settings changeable in realtime

Clock modes slave and master

Automatic and intelligent master/slave clock control

Sync sources: MADI coaxial, MADI optical, word clock, internal

Varipitch: by input signal or word clock

Sample rates: 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz, variable (Sync/word clock)

Sample Rate Range: MADI: 32 kHz - 96 kHz, word clock: 27 kHz - 200 kHz

Jitter: < 1 ns, internal and all inputs

Jitter sensitivity: PLL operates even at 100 ns Jitter without problems

Comes with DIGICheck: the ultimate measurement, analysis and test tool

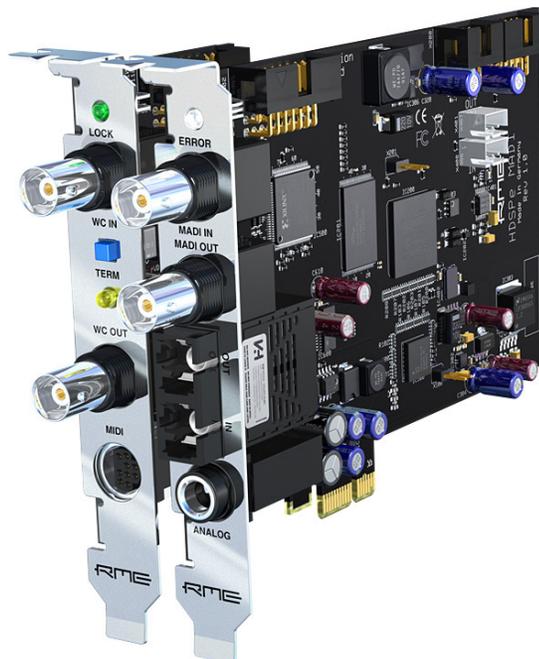
Input MADI: optical, MADI coaxial (BNC), 2 x MIDI, word clock (BNC)

Output MADI: optical, MADI coaxial (BNC), 2 x MIDI, word clock (BNC), stereo analog line/phones

Input word clock: BNC, Signal Adaptation Circuit (functional from 1.2 Vpp input signal), switchable termination

Output word clock: BNC, low-impedance driver stage, 4 Vpp into 75 Ohms, short-circuit-proof

MIDI input and output: via four 5-pin DIN jacks



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