

# MPEG-4 HD Hybrid Zapper Solution

Based on EMMA3SE/P

Renesas Electronics' MPEG-4 hybrid Zapper reference solution is a complete hardware and software platform based on the H.264 HD decoder EMMA3SE/P from Renesas. The platform includes smart card interface and is ready for CA integration.



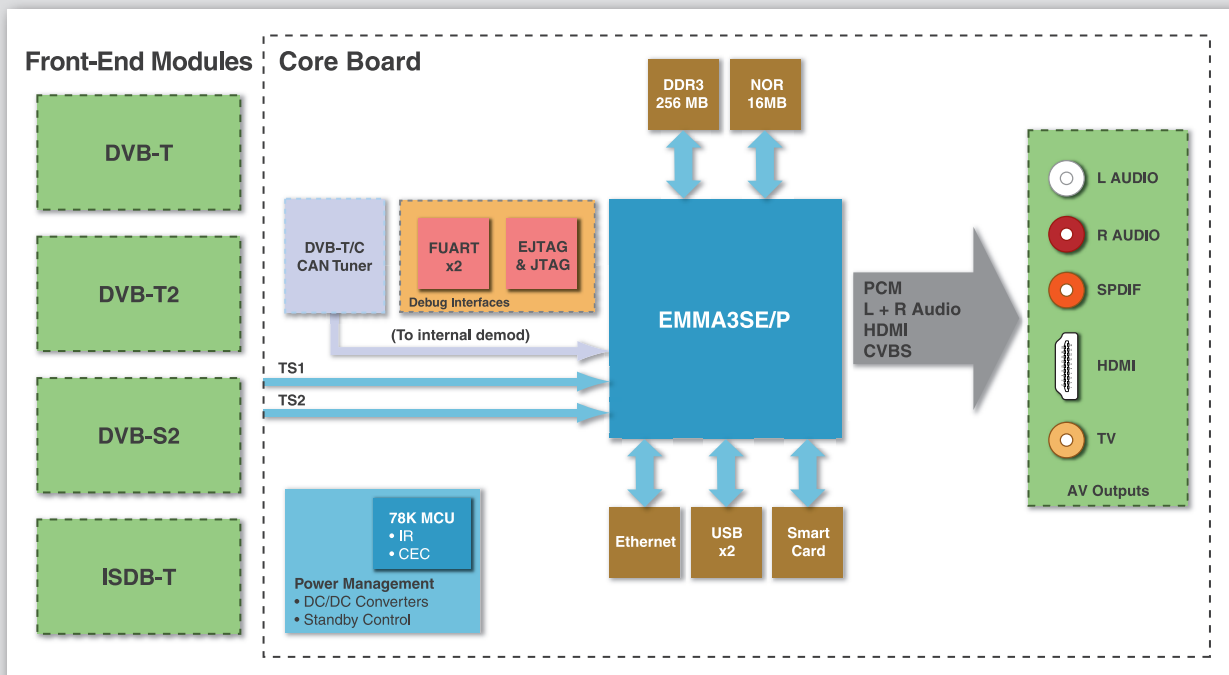
## Applications

Renesas' reference design enables, in a short and secured time to market, the creation of cost, performance and power consumption optimised MPEG-4 HD hybrid Zapper with enhanced connectivity features. Full feature USB-DVR is also supported. The reference design is based on the latest EMMA3SE/P MPEG decoder device manufactured in Renesas' low power 40nm process. The reference solution incorporates the advanced security features of the EMMA3SE/P IC defined to meet the most stringent security demands of conditional access companies. A range of front end modules enables the reference design to be used for both satellite and terrestrial markets.

## Key Benefits

- Close to production ready design to reduce time to market and R&D expense
- Complete hardware kit, from schematics and material list up to PCB layout available
- Turnkey software available from Renesas Partners (with options for user interface adaption)

## Block Diagram



## Key Features

- Low cost Zapper STB
- HD MPEG decoder EMMA3SE/P
- DVB-T/C can tuner on core board
- DVB-S2/T/T2 and ISDB-T front end modules
- HDMI 1.4 output with up to 1920 × 1080 resolution
- USB interfaces for external storage connection
- Ethernet port to support OTT services (optional)
- Low power operation
- IR remote control

## Description

### Receiver

- Selection of pluggable front end modules
  - » Twin tuner DVB-S2
  - » Twin tuner DVB-T2 (Nordig compliant)
  - » Twin tuner DVB-T (Nordig compliant)
  - » Single tuner DVB-T/C (option on core board)
  - » Twin tuner ISDB-T

### DVB Decoder (EMMA3SE/P)

- Processor Dual MIPS 4KEc CPU → 1200 DMIPS  
3 transport stream demux
- MPEG-4 AVC, HP L4.2 (dual decode) MPEG-4 MVC High Profile, MPEG-4 ASP@L5, DivX HD, max. resolution 1920 × 1080
- MPEG-2 MP@HL, MP@ML
- Audio Decoder
  - » HE-AAC, Dolby Digital, Dolby Digital Plus
  - » Audio Description, WMA, DTS, DTS transcode
  - » MS10, Real Audio

### Security

- ISO-7816 smart card interface

### Memory

- DDR3 256 MB (128 MB, 512 MB option)
- Flash NOR (option 4 – 64 MB), NAND (option)

### Low power

- Standby < 0.5 W (subject to quality of AC adaptor)
- Active 5 W approx
- Supply +12 V DC (from external AC/DC adaptor)

### Data ports

- USB2.0 Two ports for external storage (option)
- Ethernet 100Base-TX for access to OTT services or home networking (option)

### Outputs

- TV out CVBS
- Digital Video HDMI 1.4 with HDCP
- Audio output 2 x RCA (analog), S/PDIF (digital) electrical

## Deliverables

<b>The kit can be supplied as</b>	Reference hardware (guide for in-house design): hardware database, driver software from Renesas, turnkey software from 27M Technologies	
<b>Hardware</b>	Main PCB Schematics Layout and Gerbers	
<b>Software</b>	Renesas low level driver code, sample demo code	
<b>Documentation</b>	EMMA3SE/P device μPD6142x	R19PF0041ED0000
	Microcontroller 78K0/KB2	U17425EE1V0PL00
	Front End solutions for STBs	Tbd

Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

