



Valens VS100 Product Brief



Overview

The Valens VS100 is the first HDBaseT™ compliant chipset. It transmits and receives uncompressed HD, video, audio, Ethernet, power and control signals over a single 100m/328ft LAN cable.

HDBaseT™ delivers a significant value to the entire home and commercial entertainment ecosystem, from CE/PC equipment manufacturers and audio/video connectivity product suppliers, through systems integrators and retailers, to installers and consumers. Homes, offices, hotels, airports and other public places can now install a robust HD ecosystem easily, effectively and at a very low cost.

Architecture

The VS100 family consists of two chips:

- **VS100TX (Transmitter):** For DVDs, STBs and other HD source equipment.
- **VS100RX (Receiver):** For HDTVs, projectors and other display equipment.



VS100TX

The VS100TX block diagram shows a central logic core containing PDIF Logic, DDC, CEC Logic, SV Logic, and HPD Logic. This core is connected to various external interfaces. On the left, it receives RX0+/-, RX1+/-, RX2+/-, and RXC+/- signals. It has multiple control and status pins at the top: data in, clk, data out, DDC RX2, DDC TX2, CEC RX, CEC TX (Pass through mode), 5V RX, 5V TX (Pass through mode), HPD RX (Pass through mode), and HPD TX. The core's output stage includes TMDX RX, HDBaseT™ TX Link Layer, HDBaseT™ TX PHY, Ethernet, 100BTX PCS, MII PHY mode, PLL, Manegment Controller, and TMDX TX. It also features RMII MII and MDC/Mdio interfaces. On the right, it outputs HDBT0+/-, HDBT1+/-, HDBT2+/-, HDBT3+/-, and TX0+/-, TX1+/-, TX2+/-, TXC+/- signals.

VS100RX

The VS100RX block diagram shows a similar internal logic core with PDIF Logic, DDC, CEC Logic, SV Logic, and HPD Logic. Its input stage on the left includes HDBaseT™ RX PHY, HDBaseT™ RX Link Layer, Ethernet, ETH MAC Interface, 100BTX PCS, PLL, Manegment Controller, and TMDX TX. It has control and status pins at the top: data in, clk, data out, DDC TX2, CEC TX, 5V TX, and HPD TX. The core is connected to RMII MII and MDC/Mdio interfaces on the right. On the far right, it outputs TX0+/-, TX1+/-, TX2+/-, and TXC+/- signals.

The diagram illustrates the internal architecture of the HDBaseT™ RX chip. Key components and their interconnections include:

- Top Logic Row:** PDIF Logic, DDC, CEC Logic, SV Logic, and HPD Logic. External signals are data in, clk, data out, DDC TX2, CEC TX, 5V TX, and HPD TX.
- HDBaseT™ RX Link Layer:** Receives HDBT0+/-, HDBT1+/-, HDBT2+/-, and HDBT3+/- signals. It is connected to the Ethernet port, ETH MAC Interface, 100BTX PCS, and TMDX TX.
- ETH MAC Interface:** Connected to the Link Layer and provides RMII MII and MDC/MDIO interfaces.
- 100BTX PCS:** Connected to the Link Layer and the TMDX TX.
- TMDX TX:** Outputs TX0+/-, TX1+/-, TX2+/-, and TXC+/- signals.
- PLL and Managment Controller:** The Managment Controller is connected to 125MHz, Ref Clk, WKUP_OUT, WKUP_IN, I2C SLV I/F, and GPIO signals.

Applications

The VS010 chip can be used in various applications throughout multiple industries.

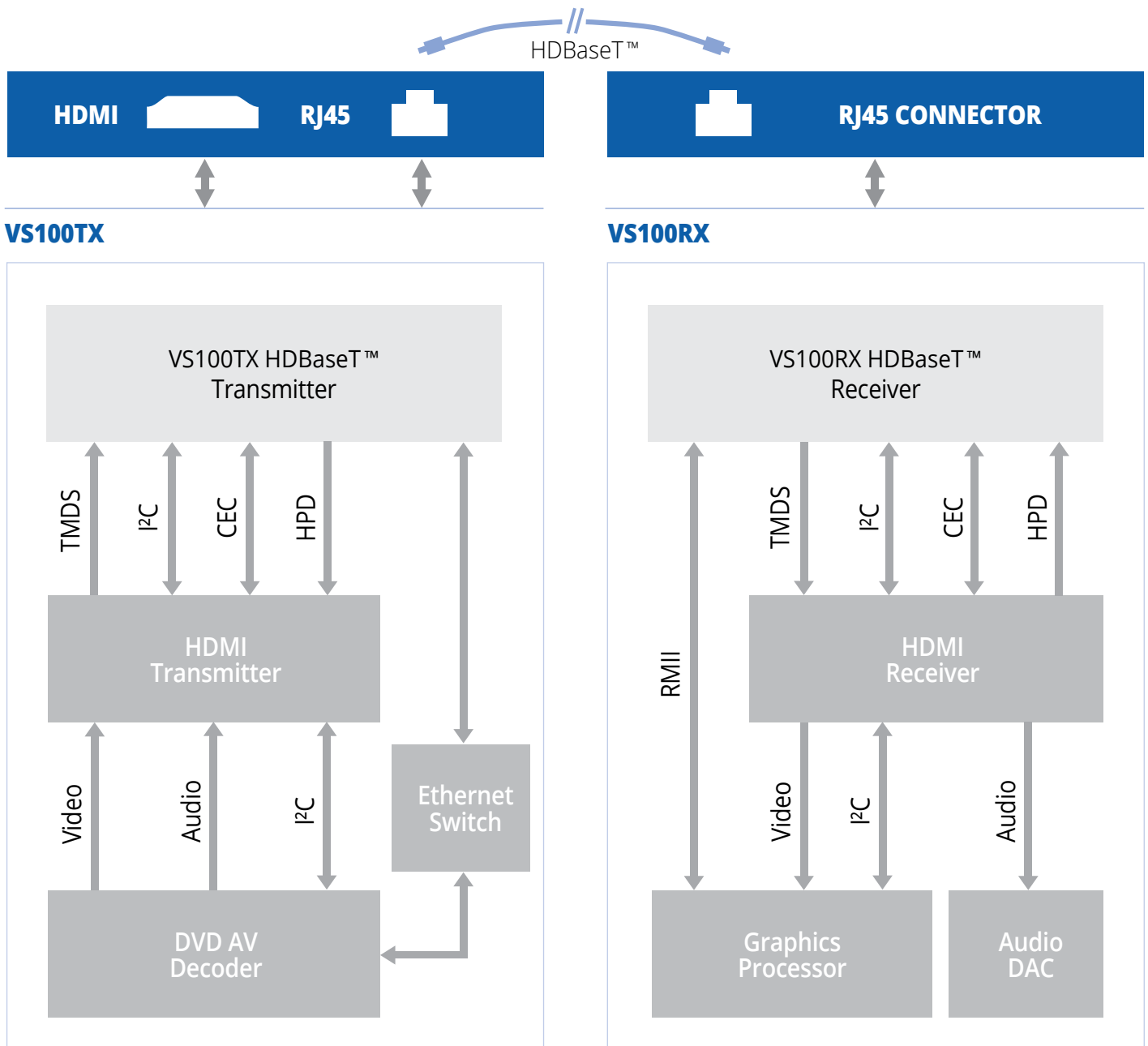
VS100TX:

Blu-ray, DVD players and recorders, digital set-top-boxes (STBs), game consoles, PCs
HDMI repeaters, splitters, switches, HDBaseT™ Switch, A/V receivers, surveillance cameras

VS100RX:

A/V receivers, DTVs, LCDs and plasma displays, rear and front projectors, HDMI repeaters, splitters, switches
HDBaseT™ Switch, digital signage, DVR for surveillance

The following diagram illustrates an example of system functionality of HDBaseT VS100 :



Key Technical Highlights

Features

5Play convergence – simultaneous distribution of:

- Uncompressed high definition (HD) video:
1080p@60Hz@48 bits, 3D, 4K x 2K
- High-quality audio
- Ethernet 100BaseTX
- PoH - Power over HDBaseT™
- Control signals including RS232 and infrared

HDCP Compliant

HDMI RX and TX interfaces for easy integration

CISPR/FCC Class B EMC/EMI compliance

Support of 100BaseTX according to IEEE 802.3u

Power:

- 1V, 1.8V and 3.3V
- 5V tolerant IOs

196-pin LPGA, 15mm x 15mm (TX), 268-pin LPGA, 21mm x 21mm (RX)

0°C to 70°C operating temperature

RoHS and Green compliant

VS100TX supported interfaces

HDBaseT™ TX

HDMI in

HDMI out

MII/RMII bi-directional interface to interact with external Ethernet MAC /switch

Bi-directional control channel which can be used for example for RS232 and IR control

I²C slave management

VS100RX supported interfaces

HDBaseT™ RX

HDMI out

MII/RMII bi-directional interface to interact with external Ethernet MAC /switch

Bi-directional control channel which can be used for example for RS232 and IR control

I²C slave management



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