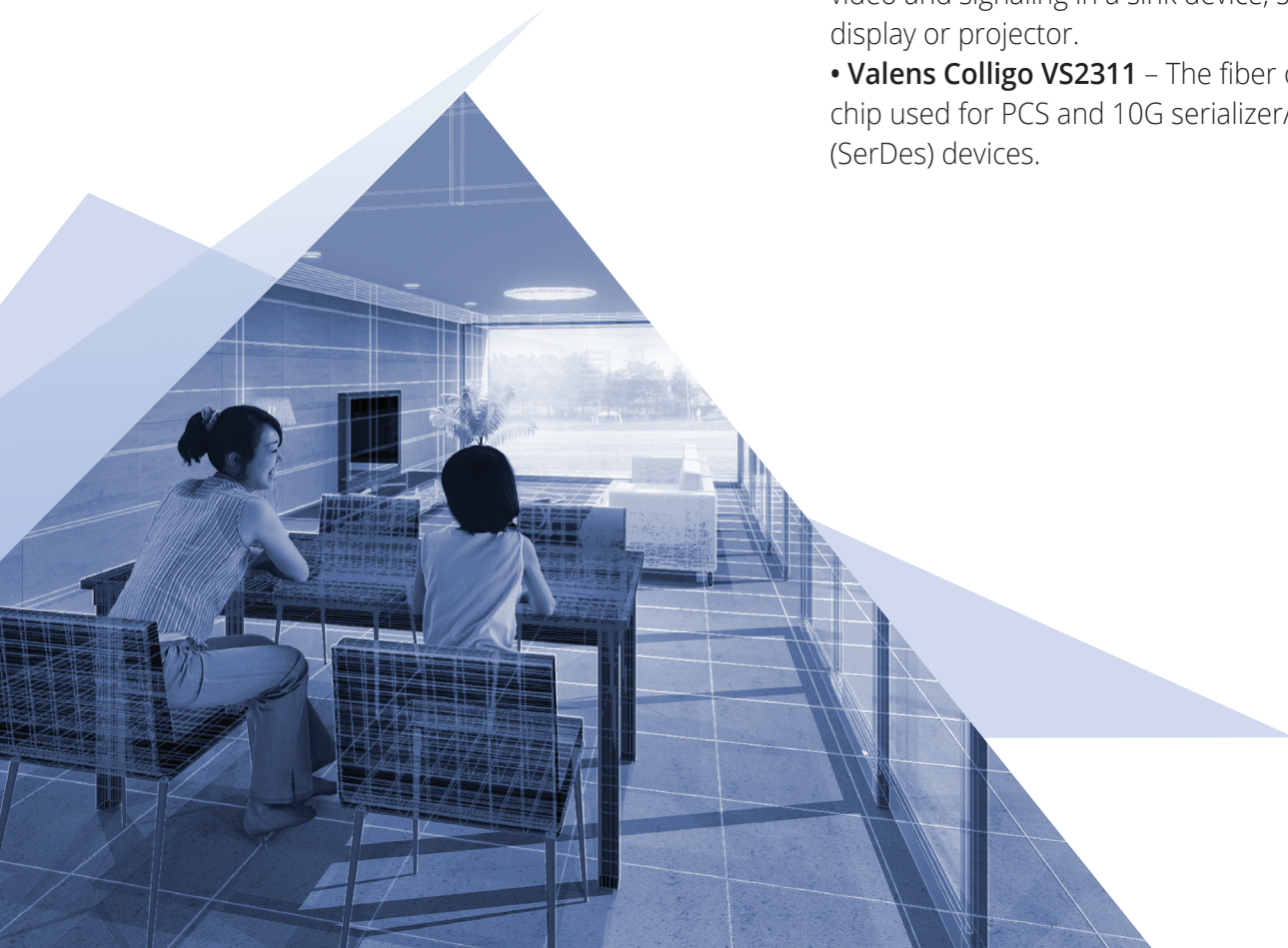# Valens
Colligo VS2311
Product Brief

Overview

Valens Colligo VS2311 introduces HDBaseT™ over fiber for video transmission over much longer distances. Coupled with Valens Colligo VS2310, Valens Colligo VS2311 is capable of delivering HD video, audio, Ethernet, and controls via multi-mode fiber (MMF) or single-mode fiber (SMF) reaching extraordinary distances. Valens Colligo VS2311 fully complies with the HDBaseT 2.0 Fiber Optic Physical Coding Sub-layer (PCS) specification. Valens Colligo VS2311 supports true multistreaming and daisy-chaining and features an innovative Fiber/LAN hybrid solution.

Architecture

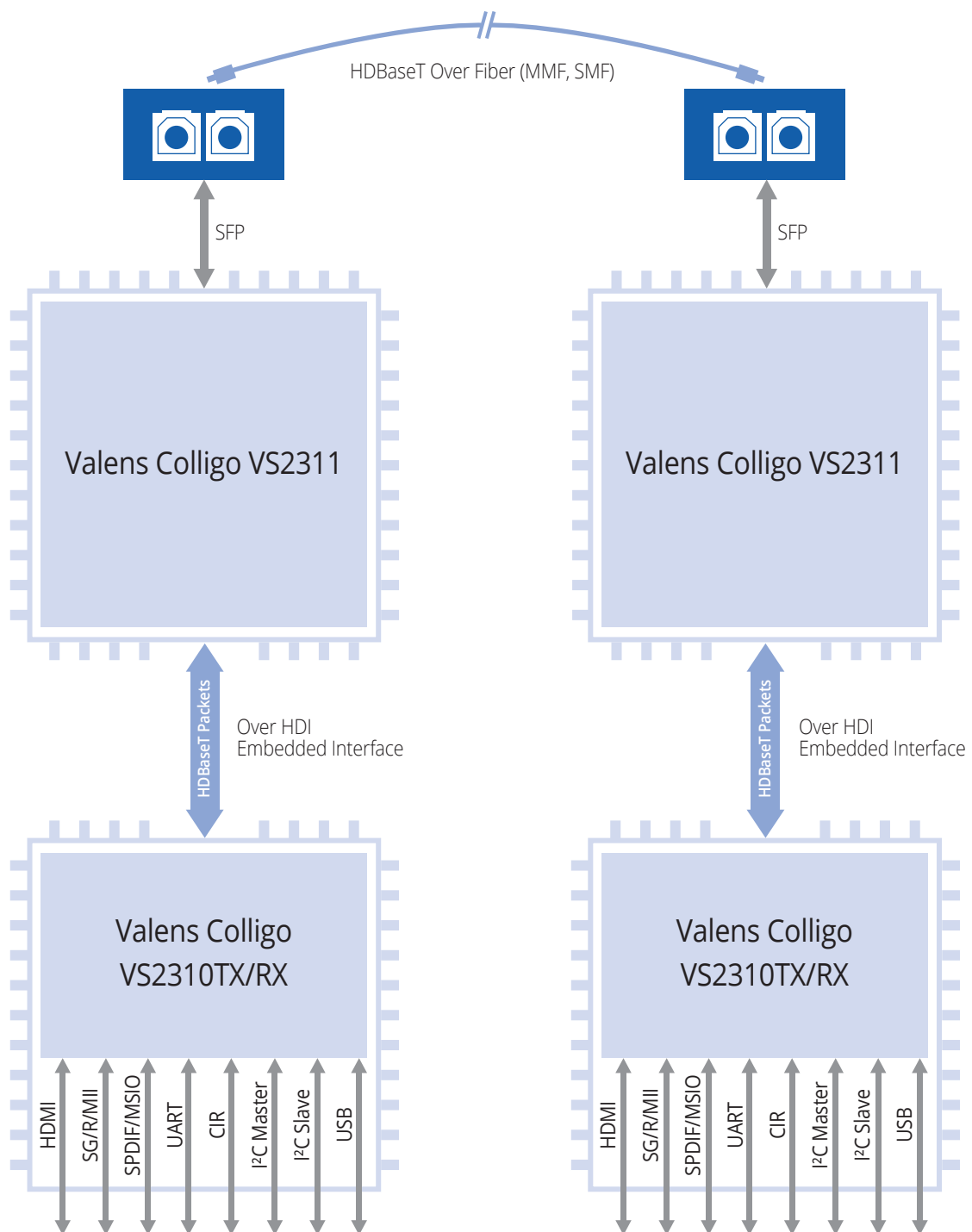Valens Colligo VS2311 works in conjunction with Valens Colligo VS2310 integrated chips:

• **Valens Colligo VS2310TX** – The transmitter chip is used for video and signaling in a source device, such as a Blu-ray player or STB.

• **Valens Colligo VS2310RX** – The receiver is used for video and signaling in a sink device, such as an LCD display or projector.

• **Valens Colligo VS2311** – The fiber optics enabler chip used for PCS and 10G serializer/deserializer (SerDes) devices.

Applications

Valens Colligo VS2311 second generation fiber optics chip can be used in various applications throughout multiple industries. Main applications include HDMI/DVI extenders over 600m with OM3 MM fiber/800m with OM4 MM fiber, 1Km and 10Km with multi mode fiber (MMF) and single mode fiber (SMF) fiber optics, AV receivers, HD projectors, industrial PCs, single wire TVs, digital signage displays, and HDBaseT fiber optics to copper bridging.

The following diagram illustrates the HDBaseT Spec 2.0 in action over fiber optics (with Valens Colligo VS2310):

HDBaseT Over Fiber (MMF, SMF)

SFP

SFP

Valens Colligo VS2311

Valens Colligo VS2311

HDBaseT Packets

HDBaseT Packets

Over HDI
Embedded Interface

Over HDI
Embedded Interface

Valens Colligo
VS2310TX/RX

Valens Colligo
VS2310TX/RX

HDMI
SG/R/MII
SPDIF/MSIO
UART
CIR
I²C Master
I²C Slave
USB

HDMI
SG/R/MII
SPDIF/MSIO
UART
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USB

Key Technical Highlights

Parameter	Value
Optical Interfaces	Standard optical module with SFI/XFI Optical power saving Bi-directional or uni-directional transmission Optical module presence identification Glueless interface to standard 10G SFP/SFP+ MSA optical transceivers Identification/reaction to TX faults & LOS compliant to MSA requirements I²C master for SFP/SFP+ MSA module management
Video Interfaces	Fully compliant with HDMI 1.4 and HDMI 2.0. EDID adjustment mechanism for HDMI 2.0 at pixel clock higher than 340MHz Glueless interface to TMDS, DDC, CEC, and HPD HDMI signals
HDMI Interface	• 600m with OM3 MM fiber/800m with OM4 MM fiber/1Km/10 Km - standard HDBaseT 2.0 over fiber optics • 4K/2K, 30Hz, 24bpp • 4K/2K, 60Hz, 24bpp with 4:2:0 pixel format
Audio Interfaces	All formats supported by HDMI 1.4 and HDMI 2.0 All major digital audio formats, including: Dolby Digital, DTS, Dolby TrueHD, DTS HD-Master Audio, Dolby Pro Logic liz 7.1 & 9.1, and more Standard SPDIF, I²S
Control Interfaces	UART, IR, I²C (slave/master), MSIO-6 General Purpose fast serial channels, USB 2.0 HDBaseT mode – Native UART, IR (TBD), S/PDIF Low Power mode – UART, IR
HDII/O Interfaces	8Gbps inter-device connectivity HDBaseT packets over inter-chip connection Glueless interface to Valens Colligo VS2311 fiber optics devices
Ethernet Interfaces	100BaseT, SG/R/MII
System Interfaces	RS232, I²C slave, SPI boot EEPROM
USB 2.0	Configurable as host or device USB port, USB 2.0 standard compliant
Performance Monitoring	Built-in self-test for performance monitoring

Parameter	Value
Noise Reduction	Complies with HDBaseT 2.0 PCS layer for fiber optics Differential error resistance Retransmission of erroneous packets Increased BER immunity Synchronization and remote fault detection
Data Rate	Auxiliary channel data rate of 300Mbps Full Duplex
Max Traffic Rate	297Mhz HDMI pixel clock
HDCP	Supported
Networking	End device functionality for HDBaseT 2.0 networking supported
Daisy Chain	Support for daisy-chain connectivity of source and sink
Power Consumption	Max typical power consumption: RX 2.5w, TX 2.6w
Junction Temp	0°C – +80°C
Dimensions	Valens Colligo VS2311TX/RX – Heat Slug BGA 27mm x 27mm Ball pitch – 1.0mm TX/RX Pin count: 676

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