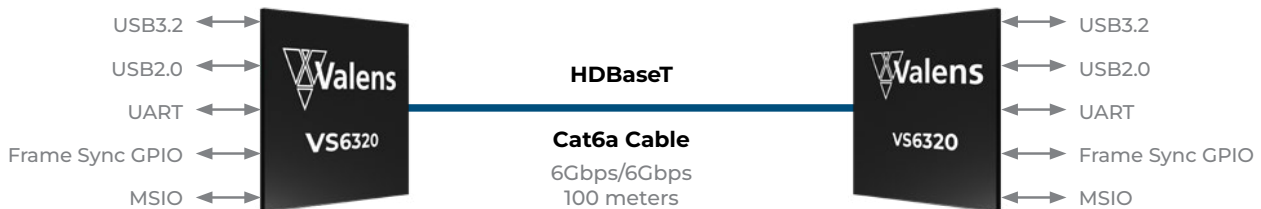# VS6320 Product Brief

The first ASIC-based USB 3.2 high performance extension solution

Overview

With the proliferation of USB peripherals supporting high bandwidth applications such as high-resolution cameras, recording devices, and more, there is a growing need for a professional-grade, high-performance USB 3.2 extension solution.

The Valens VS6320 chipset extends SuperSpeed USB 3.2 Gen 1 (5Gbps), Hi-Speed USB 2.0 (480Mbps), and Control signals over a standard Cat 6A cable for distances of up to 100 meters (328 feet). The chipset supports all USB transfer types: Control, Bulk, Interrupt, and Isochronous.

- **Reliable** - Using proven high-performance HDBaseT technology for high-bandwidth extension.

- **Zero latency** - Meeting the requirements of the time-sensitive USB protocol.

- **Distance** - Up to 100m/328ft.

- **Convergence** - Additional interfaces extended over the link, including MSIO, Frame Sync, and UART.

- **Advanced Frame Sync** - Enabling synchronization of multi-camera systems.

- **PoH/PoE/PoE+** - Providing freedom to install devices in locations without AC outlets.

- **Field Terminated** - For professional, streamlined installations.

Applications
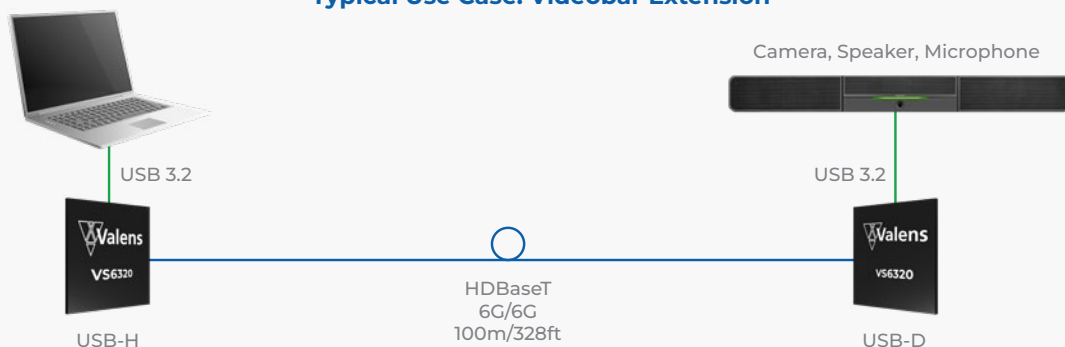

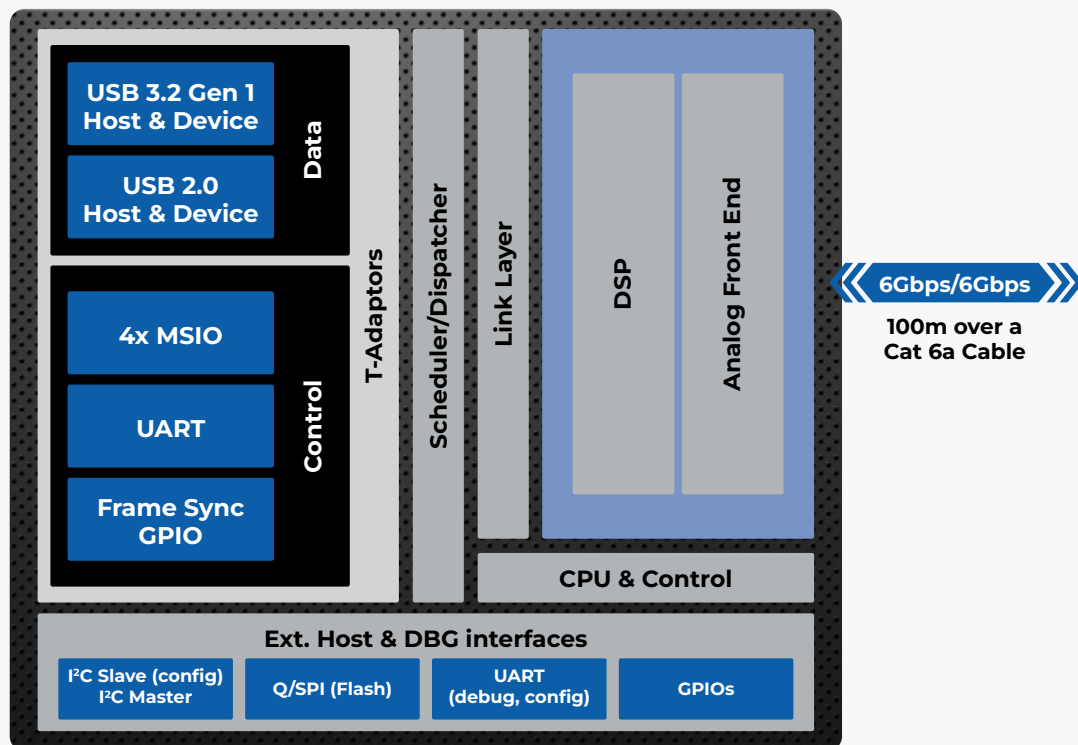**USB cameras** **Audio devices** **Touch screens** **Storage devices** **Human Interface Devices (HIDs)**

Typical Use Case: Videobar Extension

Camera, Speaker, Microphone

USB 3.2

USB 3.2

HDBaseT
6G/6G
100m/328ft

USB-H

USB-D

VA6320 Functional Block Diagram

Data

- USB 3.2 Gen 1 Host & Device
- USB 2.0 Host & Device

Control

- 4x MSIO
- UART
- Frame Sync GPIO

T-Adaptors | Scheduler/Dispatcher | Link Layer | DSP | Analog Front End

CPU & Control

Ext. Host & DBG interfaces

- I²C Slave (config) I²C Master
- Q/SPI (Flash)
- UART (debug, config)
- GPIOs

6Gbps/6Gbps
100m over a Cat 6a Cable

Technical Highlights

Link	
Maximum data rate	6Gbps/6Gbps
Distance	100 meters (328 feet)
Cable	Cat 6a
Converged interfaces	
USB3.2 Gen 1	SuperSpeed 5Gbps/5Gbps All transfer types: Control, Bulk, Interrupt, and Isochronous
USB 2.0	Hi-Speed 480Mbps/480Mbps All transfer types: Control, Bulk, Interrupt, and Isochronous
MSIO	4 I/Os Sample rates: 0.5 MHz, 1.0 MHz or 1.5 MHz
Frame Sync GPIO	Latency < 15µs Jitter < 1µs Up to 20 KHz frame rates. Typical rates are in the range between 25 Hz and 500 Hz.
UART	Baud rates: 19200, 38400, 57600, 115200, 230400, 460800, 921600
Other	
System Interfaces	UART, I²C, SPI/QSPI, GPOs/GPIOs
Junction Temperature	-40°C to +125°C
Power Dissipation	2W (typical)
Packaging	FCCSP 13 mm x 13 mm 225-ball grid (15 x 15)