

A photograph of an airplane cabin interior, showing rows of white seats with grey headrest covers and small entertainment screens. The perspective is from the side, looking down the aisle. The image is partially obscured by large, semi-transparent geometric shapes in shades of blue and green, which are layered over the top and right sides of the page.

Valens VA6000 Chipset

Overview

The Valens VA6000 integrated circuit (IC) tunnels high quality, multi-application data streams of USB, 1Gbps Ethernet, Audio and Serial Control signals over a cost effective, single unshielded twisted pair (UTP) cable with length up to 30 meters (100 feet), symmetrical link based on HDBaseT technology.

The VA6000 was originally developed by Valens to address the connectivity needs of the automotive market, and is now also optimized for audiovisual applications.

The VA6000 IC can be used as a point-to-point tunneling solution for several applications running simultaneously over a single cable, or in daisy-chain topology, providing infrastructure for diversified applications such as video walls, in-flight passenger entertainment systems, interactive touch kiosks, and extenders for different interfaces, such as audio and USB.

HDBaseT is optimized for time-sensitive, high throughput networks, ensuring delivery of real-time applications with near-zero latency over low-cost cables.

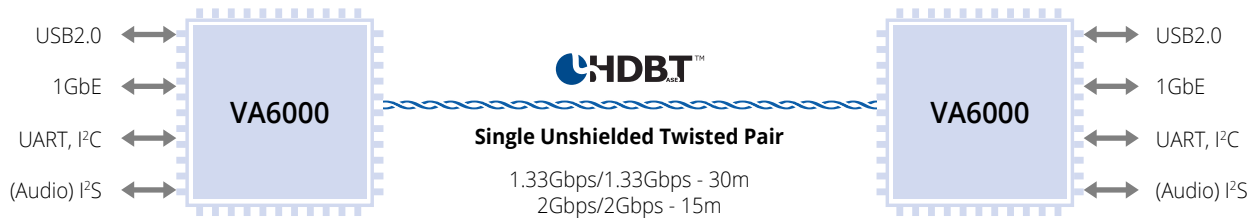
Benefits

- High bandwidth, symmetric channel
- Specifically designed to handle harsh EMI and environmental interferences
- Adaptive equalizer to compensate for cable aging, temperature changes, and physical and environmental impacts
- Point-to-point and daisy-chaining topologies supported for increased flexibility in system design
- Data transmission over inexpensive, low-weight infrastructure – single unshielded twisted pair (UTP)

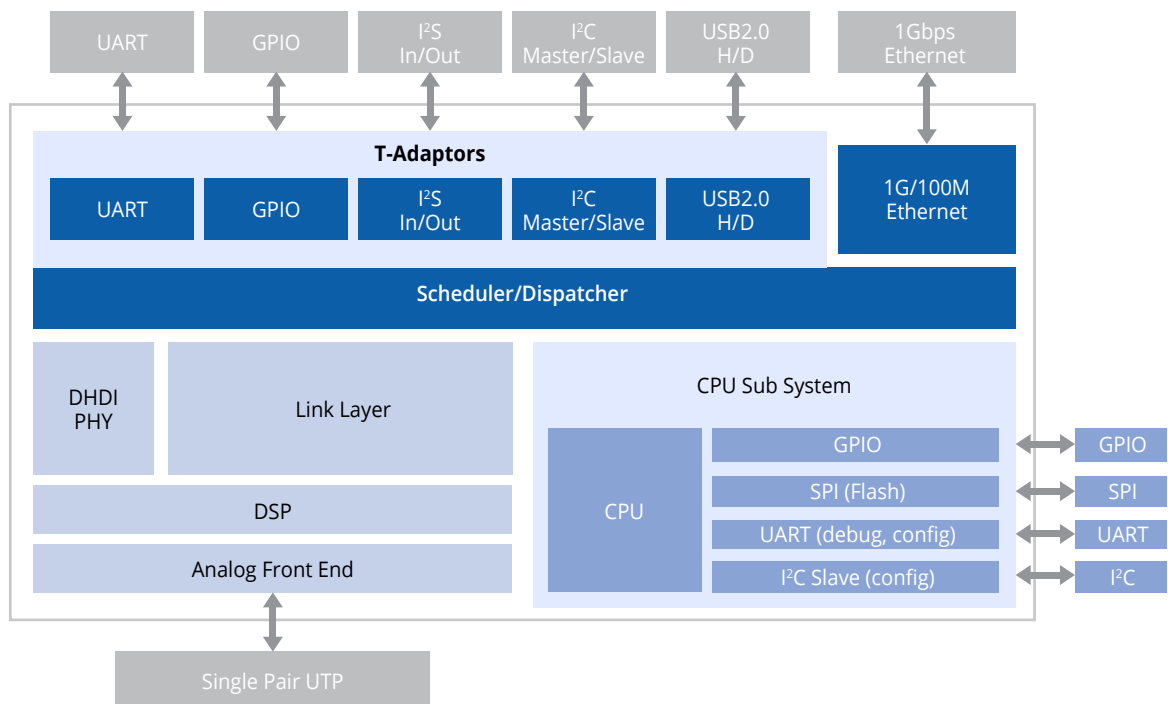


Architecture

The Valens VA6000 is a transceiver embedded on both ends of the link, simplifying AV applications by converging multiple data streams over a single UTP lightweight cable



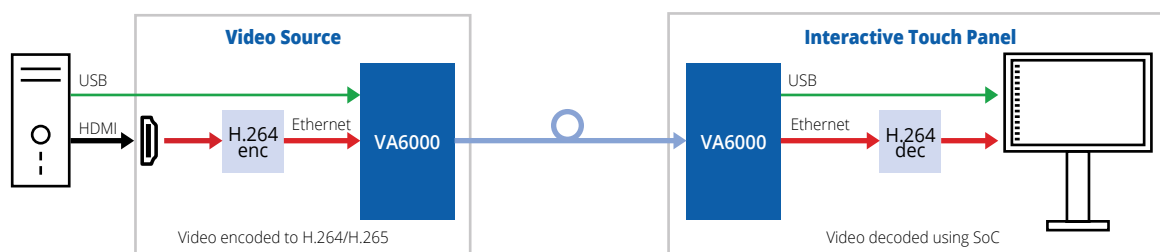
VA6000 Functional Block Diagram



Applications

- Daisy-chain topology:
 - In-flight entertainment systems (IFE), with lower chip and connector counts
 - Digital signage and video walls
- Point-to-point topology:
 - Interactive touch display applications such as white boards, kiosks, industrial PC touch panels
 - Extenders: audio, USB, video conferencing

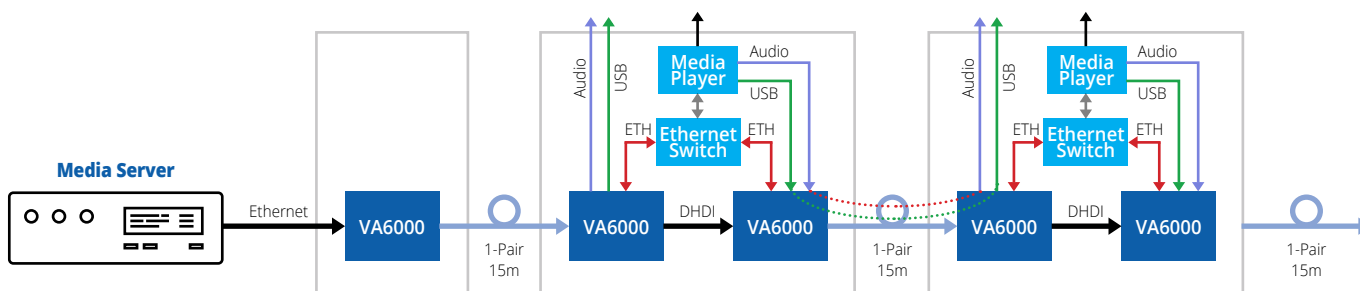
Point-to-point connectivity for interactive applications



Key Benefits:

- Touch-panel extension allows for sleeker end-point design with remote computers
- Reduced cost with simple touchscreen instead of all-in-one displays
- Simple installation

Daisy-chain for simplified in-flight entertainment



Key Benefits:

- Support for daisy-chain connectivity of multimedia units, simplifying system design
- Reduced cables length, weight and cost
- Simpler installation
- Cable diagnostics capabilities over the entire chain
- USB charging

Key Technical Highlights

Parameter	Value
HDBaseT Link Bandwidth	<ul style="list-style-type: none">- Symmetric 1.33Gbps/1.33Gbps- Symmetric 2Gbps/2Gbps
Infrastructure	Transmission distance of up to 30m @ 1.33Gbps 15m @ 2Gbps over a single unshielded twisted pair (UTP)
Topology	<ul style="list-style-type: none">- Point-to-point- Daisy-chain
Audio Interfaces	Supports multiple I ² S/TDM audio streams <ul style="list-style-type: none">- Multiple, independent I²S interfaces (2 inputs + 2 outputs)- Clock frequencies of up to 25MHz- 1-4 data lane modes- Programmable Clock and Word Clock direction- Standard I²S, Left justified, Right justified, TDM modes
Control Interfaces	<ul style="list-style-type: none">- I²C Master/Slave interfaces (400KHz multi-slave devices, 800KHz point-to-point)- UART variable speed interface (baud rates of up to 2Mbps)
Ethernet Interfaces	1Gb/100BaseT Ethernet – RGMII, SGMII, RMII
USB	Supports USB2.0, multi-streaming <ul style="list-style-type: none">- Multiple USB2.0 device ports- Auto-configurable USB port, each can act either as Host or Device- Allows fast charging capability in every USB port
Package	11mm X 11mm FCTEBGA
Ball Count	225 pins
Temperature	Max junction temperature:125 degrees
Power Dissipation	1000mW-1800mW typical, depending on use case
EMC performance	Low emission and robust noise immunity



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