

FEATURES

- Serial digital video interface for standard and high definition component video:
 - SD 525i and 625i
 - HD 720p 24, 25, 30, 50 and 60
 - HD 1080i 50, 60
 - HD 1080p 24, 25, 30, 50 and 60
- Supports 8, 10 or 12-bit component digital video
- Long reach performance over single 75Ω or 50Ω coaxial cable:
 - HD over 100m of RG59 or 140m of RG6
 - SD over 210m of RG59 or 300m of RG6
- "Up-the-cable" auxiliary data channel for remote command and control of devices
- Power-over-Coax (PoC) for remote devices
- Integrated audio embedder and de-embedder for downstream carriage of up to 8 channels of 48kHz digital audio
- Asynchronous Serial Interface (ASI) for transmission of compressed video/audio using IEC 13818-1 streams
- Downstream ancillary (ANC) data insertion and extraction
- User selectable processing features, including:
 - Timing Reference Signal (TRS) insertion
 - Programmable ANC data insertion
 - Illegal video code word re-mapping
- 4-wire Genum Serial Peripheral Interface (GSPI) for external host command and control
- Dedicated JTAG test interface
- 1.8V or 3.3V selectable digital I/O power supply
- Small footprint 11mm x 11mm 100-BGA (SD-only Tx in 56-pin QFN)
- Low power operation
- Pb-free and RoHS compliant

Aviia™

Advanced Video Interface for Industrial Applications



Aviia is Genum's high bandwidth, all digital, long reach A/V interface for professional and industrial applications. Aviia solutions provide high definition video, digital audio, bi-directional control and power over a robust and cost-effective coax interface.

GENERAL DESCRIPTION

Aviia provides a flexible solution for a broad range of business and industrial A/V applications where long distance transmission is required. With support for uncompressed, full-bandwidth high definition video, up to 1080p, Aviia solutions can be used in applications where image quality and resolution are paramount, such as machine vision, video conferencing and digital signage.

AVIIA PROVIDES:

- A direct HD upgrade path for existing analog-over-coax systems
- An ideal replacement for analog composite surveillance systems
- Compatibility with a broad range of coax cable types for a wide range of industrial applications
- The advantages of coax infrastructure, including its capabilities as a rugged, low-cost, simple and field-terminable cable medium
- An alternative to bulky and costly cabling solutions such as LVDS or TMDS

With the complete Aviia reference design, it is possible to implement an all-digital, bi-directional multimedia interface over coax.



HIGH DEFINITION VIDEO

Aviaa supports 8-, 10- and 12-bit video data, for RGB or YCbCr 4:4:4, and YCbCr 4:2:2 or 4:2:0. A configurable 20-bit wide parallel digital video bus is provided, with associated pixel clock and timing signals. Aviaa solutions support direct interfacing of ITU-R BT.656 SD formats, and HD formats conforming to ITU-R BT.709 and BT.1120-6 for 1125-line formats, and SMPTE 296M for 750-line formats. Aviaa solutions may also be configured to accept CEA-861 timing.

SERIAL DIGITAL AUDIO

The Aviaa HD transmitter is capable of embedding up to 8 channels of serial digital audio within the ancillary data space of the video stream. The complementary Aviaa HD receiver contains the audio de-embedding function, providing serial digital audio outputs and associated audio clocks. Audio formats supported by Aviaa HD devices include AES/EBU for professional applications, S/PDIF, and I²S.

UP-THE-CABLE CONTROL

The Aviaa solution provides an auxiliary data channel for “up-the-cable” control., which can be used to send upstream data over the coax cable up to 6 Mb/s (limit is 500 Kb/s for SD video), allowing for implementation of any half-duplex digital communication scheme. Since the auxiliary data channel may also be used to send serial digital audio, a bi-directional audio system can be implemented—ideal for intercom or “talk-back” applications.

POWER-OVER-COAX (POC)

Completing the Aviaa A/V connectivity solution is the ability to send DC power over the same single coax as the high bandwidth video, digital audio and auxiliary data. Up to 25W (25V at 1A) can be sent over the coax, for powering remote devices, such as PTZ cameras. The optional PoC feature can also be used to implement a remote sensing mechanism, for detecting a disconnection or mechanical link failure.

ASYNCHRONOUS SERIAL INTERFACE (ASI)

Aviaa solutions support an Asynchronous Serial Interface (ASI), to carry compressed audio and video transport streams, conforming to IEC 13818-1, at 270Mb/s. Transport streams can be interfaced directly to the Aviaa devices for 8b/10b encoding prior to transmission over the serial link. This function can be used to allow the transmission of compressed data over coax.

TARGETED MARKETS

- Surveillance and HD-CCTV
- Machine vision
- Digital signage
- Large venue displays
- Video conferencing
- Medical imaging
- Industrial A/V

APPLICATIONS

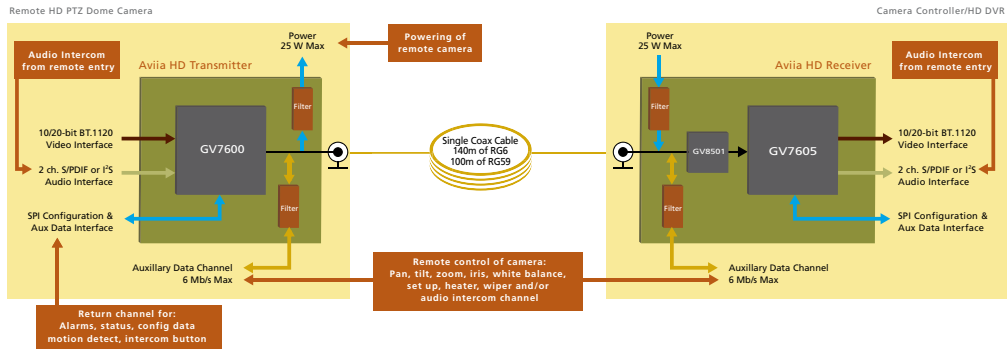
- Industrial and surveillance cameras
- Digital video recorders (DVR)
- Video servers, mixers and switchers
- Camcorders
- Video monitors and displays
- Framegrabbers and video capture devices
- Video compression CODECs



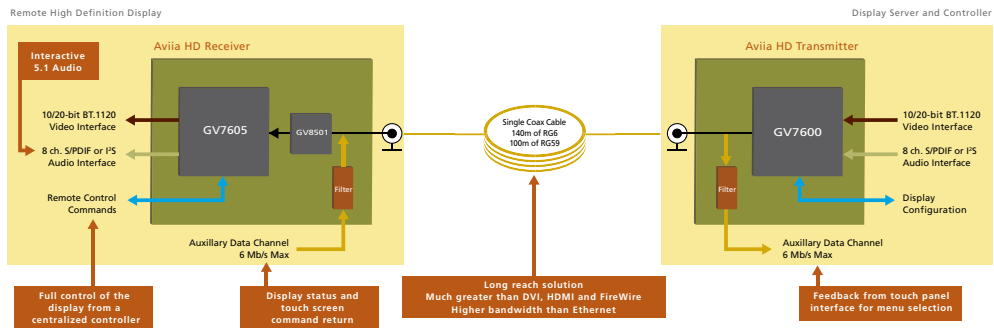
APPLICATIONS

Due to the flexibility and broad range of features of the Aviaa solution, many applications can be supported.

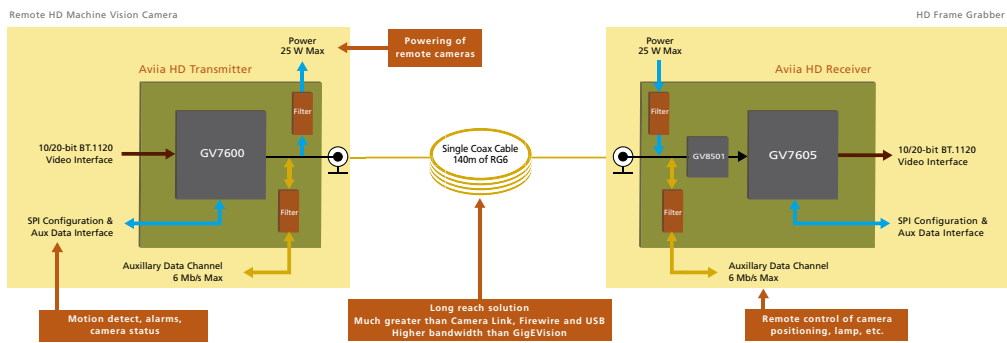
HIGH DEFINITION VIDEO SURVEILLANCE



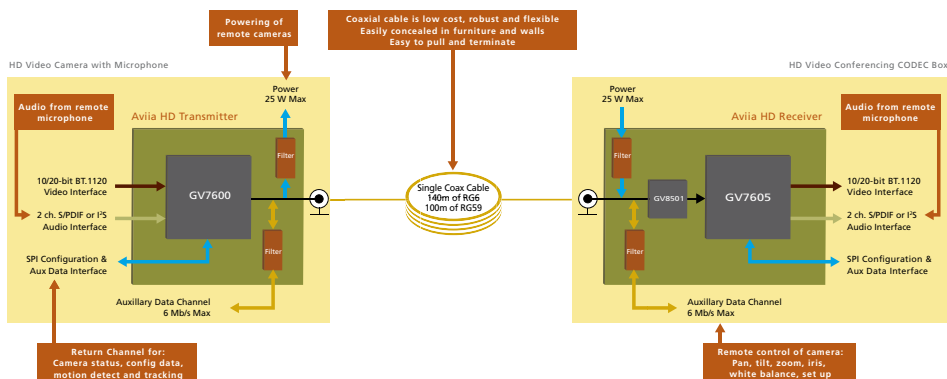
DIGITAL SIGNAGE



MACHINE VISION



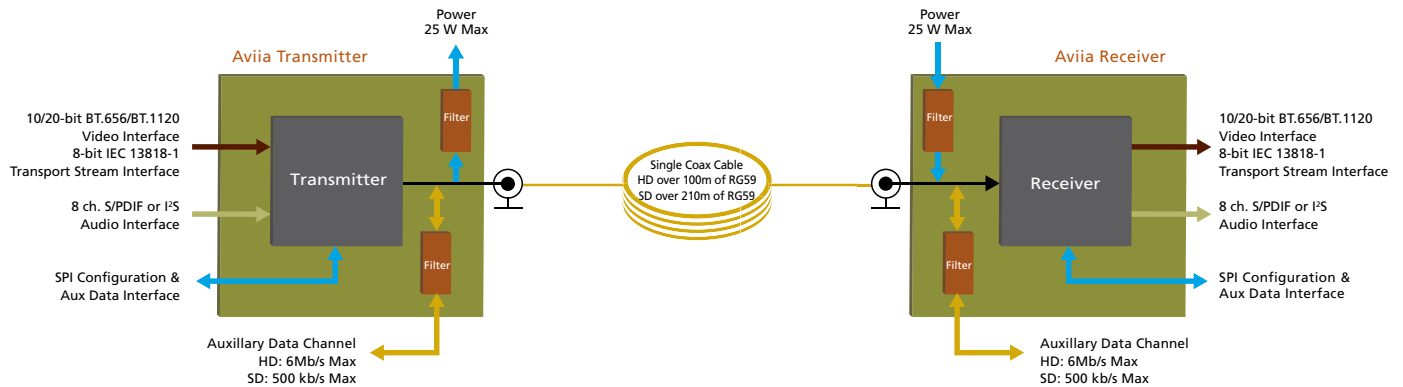
HIGH DEFINITION VIDEO CONFERENCING



AVIIA TRANSMITTER & RECEIVER FEATURE/COMPARISON CHART

	GV7500/01	GV7600/05	GV7601
Standard Definition: 525i and 626i at 270 Mb/s	•	•	•
High Definition: 720p24, 25, 30, 50 and 60 at 1.485 Gb/s		•	•
High Definition: 1080i50 and 60; 1080p24, 25 and 30 at 1.485 Gb/s		•	•
Full High Definition: 1080p50 and 60 at 2.97 Gb/s		•	•
270 Mb/s: 300m/980ft of RG6 or 210m/690ft of RG59	•	•	•
1.485 Gb/s: 140m/460ft of RG6 or 100m/325ft of RG59		•	•
2.97 Gb/s: 100m/330ft of RG6 or 72m/236ft of RG59		•	•
Integrated Cable Equalizer in Receiver	•		•
AES, S/PDIF and I ² S Audio: up to 8 channels at 48 kHz		•	•
Programmable Auxiliary Data Interface	•	•	•
8/10-bit BT.656 Pixel Interface: 27 MHz	•	•	•
16/20-bit BT.1120 Pixel Interface: 74.25 or 148.5 MHz		•	•
CEA-861 Timing		•	•
YCbCr 4:2:2 (YUV)	•	•	•
YCbCr/RGB 4:4:4		•	•
Asynchronous Serial Interface (IEC 13818-1)	•	•	•
Wide temperature range: -20°C to +85°C		•	•
56-QFN: 8mm x 8mm	•Tx		
100-BGA: 11mm x 11mm	•Rx	•	•

AVIIA SYSTEM BLOCK DIAGRAM



LEARN MORE:

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