

DENSITÉ 3+ ACE-3901-IO

High-density SDI/IP Gateway Application for ACE-3901



SDI/IP gateway application for the advanced software-defined platform Densité 3+ ACE-3901.

The ACE-3901-IO application from Grass Valley® is a high-density and high-performance gateway that can encapsulate or de-capsulate up to 64 SDI signals to/from uncompressed SMPTE ST 2110. It supports UHD for both SDI and SMPTE ST 2110, enabling seamless SDI<->IP transitions. Single SMPTE ST 2110-30/31 audio flow per channel can be configured to support up to 16 channels of embedding/de-embedding to/from SDI. Dual 100/200 GbE QSFP sockets allow fiber or electrical connectivity to redundant networks as per SMPTE ST 2022-7.

The high density allows 384 (192 SDI->IP and 192 IP->SDI) gateways per 4 RU Densité® 3+ FR4 frame, saving substantial rack space in high channel count environments. Its modular scalability is ideal for addressing increasing content demands.

The ACE-3910 Agile Computing Engine offers up to 400 Gb IP bandwidth, meeting the demand for high-density IP gateways. It delivers the highest IP input/output density in the market, protecting customers' CAPEX investments in HD, UHD SDI, and IP infrastructure. The application-based licensing model adapts to new workflows with different software applications, creating a truly virtualized hardware environment.

The ACE-3901-IO is centered around the GV Media Universe, offering seamless integration of modular devices as distributed edge processing units within a larger system. This hybrid approach combines modular hardware, commercial off-the-shelf (COTS) computing, and software to create a highly flexible and agile solution tailored to your needs. It can be configured using the on-board HTML5 web interface and documented REST API, and controlled via NMOS IS-04/05. Additionally, it can be configured, controlled, and monitored by GV Orbit® from Grass Valley.

Densité 3+ FR4



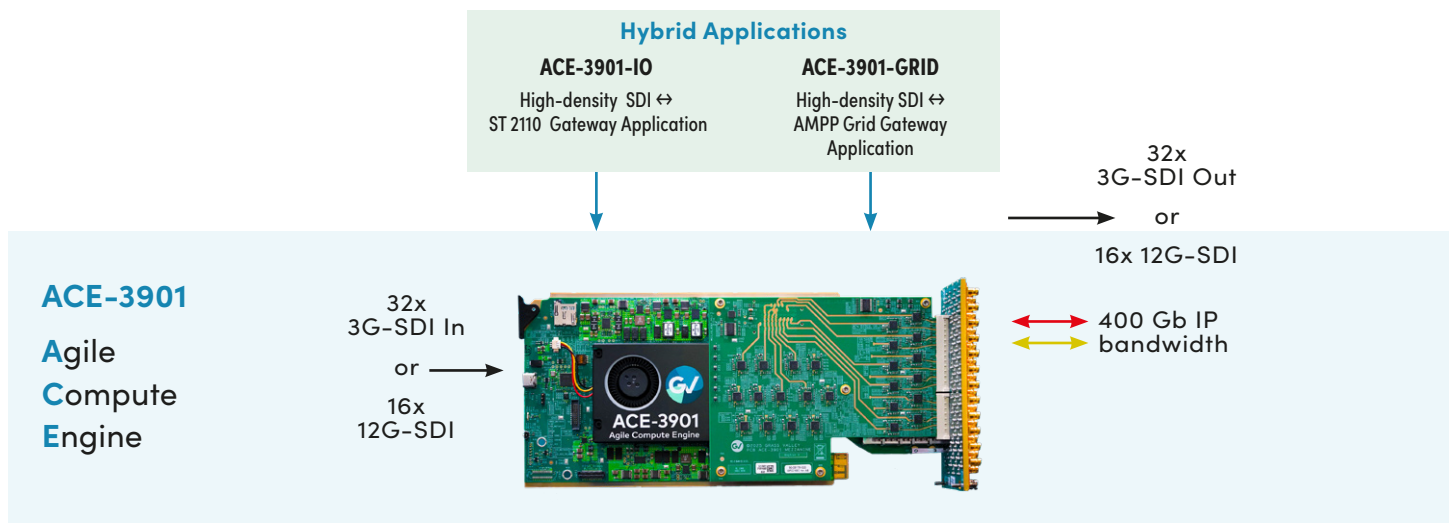
Densité 3+ FR1



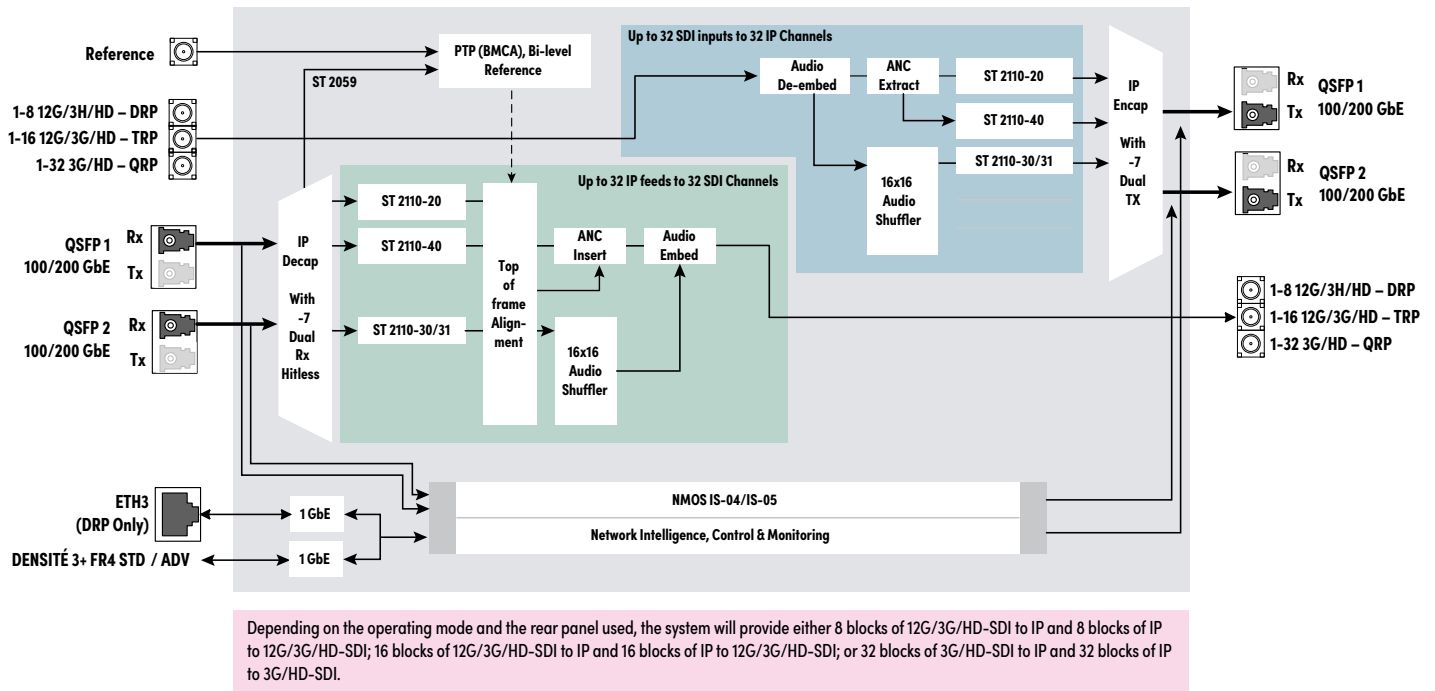
Key Features

- Very high density with 64 I/O per card:
 - 384 3G Gateways per 4 RU Densité Frame
 - 256 12G Gateways per 4 RU Densité Frame
- Supports up to 32 3G/HD SDI inputs and 32 3G/HD SDI outputs and up to 16 12G SDI inputs and 16 12G SDI outputs
- Fast, clean, and quiet switching via make-before-break or break-before-make modes
- Optional Frame Sync support for SDI inputs, referenced using external blackburst, internal URS, or Precision Time Protocol (PTP)
 - Each channel can run independently and lock to different reference signals, which enables operation at different frame rates
 - Up to four frames of video delay available for SDI input channels
 - All channels support a low-delay mode and independent H and V offset adjustments
- Multiple SDI standards and formats supported, including UHD Single Stream SMPTE ST 2110 and 12G SDI I/O
- SDI embed/de-embed of up to one audio flow per channel
- Flexible IP connectivity through two distinct QSFP ports for optical or electrical modules:
 - 100/200 GbE Optical QSFP
 - SMPTE ST 2022-7 Class A & D seamless protection switching
- Supports IGMPv3 source-specific multicast, allowing transmission in multicast groups
- SMPTE ST 2059-1/-2 PTP with BMCA
- NMOS IS-04 discovery and registration with group hints tag support
- NMOS IS-05 device connection management
- In-band or out-of-band control of NMOS
- Support of DHCP, LLDP and DNS-SD for easy IP configuration
- SMPTE ST 2110-20 video including UHD Singlestream
- SMPTE ST 2110-21 Wide/Narrow profile receivers and Narrow senders
- SMPTE ST 2110-30 PCM audio
- SMPTE ST 2110-31 AES3 transparent transport
- SMPTE ST 2110-40 metadata associated with SMPTE ST 2110-20 video stream
- Seamless integration with GV Media Universe and GV Orbit Control, Configuration and Monitoring software including logging and reporting
- HTML5 web-based configuration interface
- Open configuration management and monitoring with the REST API
- Individual ACE-3901 applications licensed, purchased as needed
- Rapid switching between ACE-3901 applications

ACE-3901 Application Portfolio



ACE-3901-IO Block Diagram



Specifications

SDI Only, IP Only or Hybrid (SDI/IP) (Inputs/Outputs)

Physical: 64 HD-BNC connectors configured as 32 inputs and 32 outputs

SDI standards:

- SMPTE ST 292 (1.485, 1.485/1.001 Gb/s)
- SMPTE ST 424 (2.970, 2.970/1.001 Gb/s)
- SMPTE ST 2082-1:2015

Supported input/output formats:

- HD: SMPTE ST 274: 1080i59.94, 1080i50
- HD: SMPTE ST 296: 720p59.94, 720p50
- 3G: SMPTE ST 425 level A (mapping 1)
- 12G: SMPTE ST 2082-10: 2160p59.94, 2160p50

Cable length (Belden 1694A):

- HD: 165m (540 ft.) at 1.485 Gb/s
- 3G: 120m (390 ft.) at 2.970 Gb/s

Cable length (Belden 4794):

- 12G: 60m (195 ft.) at 11.88 Gb/s

Ethernet Ports for Media

Physical: Two QSFP sockets for active optical cable, short- and long-reach fiber

Standard: IEEE 802.3

Performance: Up to 200 Gb of streaming per direction with 16x16 (TRP) rear panel

Ethernet Port for Control (ACE-3901-3+DRP-H Rear Only)

Physical: One electrical RJ45 port

Standard: IEEE 802.3 1000 Mb/s

Reference Input

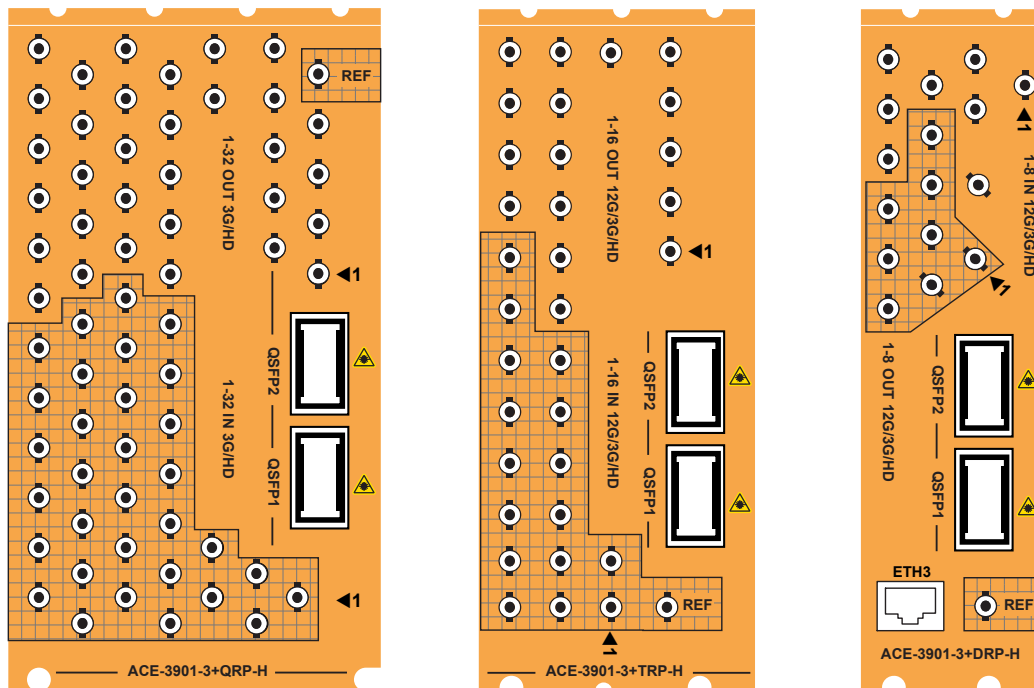
Physical: HD-BNC/75Ω connector

Standard: SMPTE ST 170/SMPTE ST 318/ITU 624-4 blackburst

Electrical

Power: 60W maximum

ACE -3901-IO High-density SDI to IP and IP to SDI Gateway Application



Ordering

Densité 3+ Frame

ACE-3901

Agile Compute Engine for SDI/IP processing

ACE-3901-3+QRP-H

Quad rear panel for Densité 3+ with 32x32 HD-BNC (3G/HD) and 2x 100 Gb QSFPs

ACE-3901-3+TRP-H

Triple rear panel for Densité 3+ with 16x16 HD-BNC (12G/3G/HD) and 2x 200Gb QSFPs

ACE-3901-3+DRP-H

Double rear panel for Densité 3+ with 8x8 HD-BNC (12G/3G/HD) and 2x 100Gb QSFPs

Application Software

ACE-3901-IO

High-density SDI/IP gateway application

ACE-3901-IO-OPT-FS

SDI inputs frame synchronization option for IO application

QSFP+ Options (one or two QSFP are needed to run this application)

GVTR-100G-SR4-G

QSFP28 100GBASE SR4 optical transceiver MMF

GVTR-100G-LR4-G

QSFP28 100GBASE LR4 optical transceiver SMF

GVTR-200G-SR4-G

QSFP56 200GBASE SR4 optical transceiver MMF

GVTR-200G-LR4-G

QSFP56 200GBASE LR4 optical transceiver SMF

Remote Control

GV Orbit, HTML5 web-based configuration interface

This product may be protected by one or more patents. For further information, please visit: www.grassvalley.com/patents

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