Gateway

The Highest Density DSP-based
1RU IP Audio Codec

AoIP Interfaces

AES67 ST 2110-30 WHEATNET

www.tieline.com

Tieline®
The Codec Company

Gateway Multichannel IP Codec (TLR6200)

Networking flexibility like never before…

The Tieline Gateway is the most powerful DSP-based 1RU IP codec enabling transport of multiple channels of mono or stereo audio across the Public Internet or any QoS-enabled IP network, including T1 and T3 connections and private WANs with MPLS. The Gateway streams up to 16 IP audio channels with support for AES67, ST 2110-30, AES3 and analog I/O as standard.
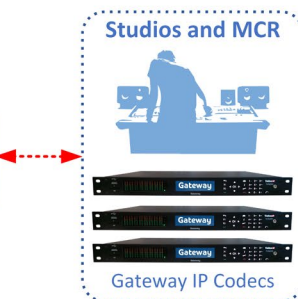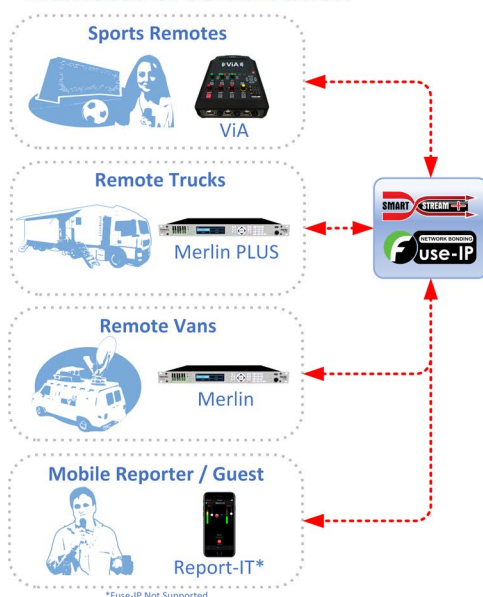
Applications

It is perfect for large-scale audio distribution to single or multiple locations, as well as managing multiple incoming remotes at the studio with hitless packet switching using SmartStream PLUS redundant streaming and bandwidth aggregation using Fuse-IP technologies over internet connections. It supports 16 bidirectional mono or 8 bidirectional stereo streams of IP audio in 1RU to increase channel density and reduce rack space requirements.
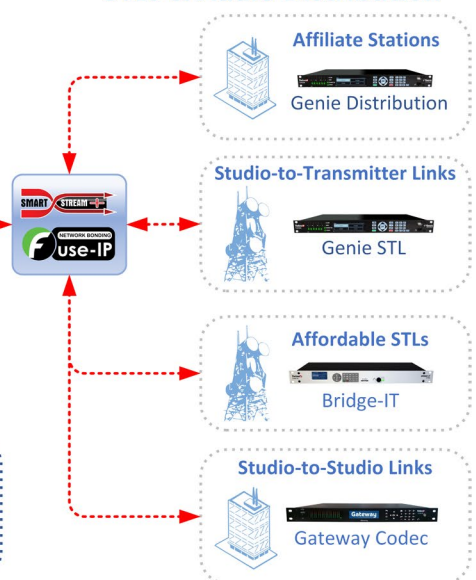
Its feature-rich and compact design is interoperable with all Tieline IP codecs and compatible over SIP with all EBU N/ACIP Tech 3326, 3347 and 3368 compliant codecs and devices. The Gateway is ideal for:

➤ Audio contribution and managing multiple incoming remotes.

➤ Studio-to-Transmitter Links.

➤ Network syndication of programming.

➤ Multi-channel links to remote studios.
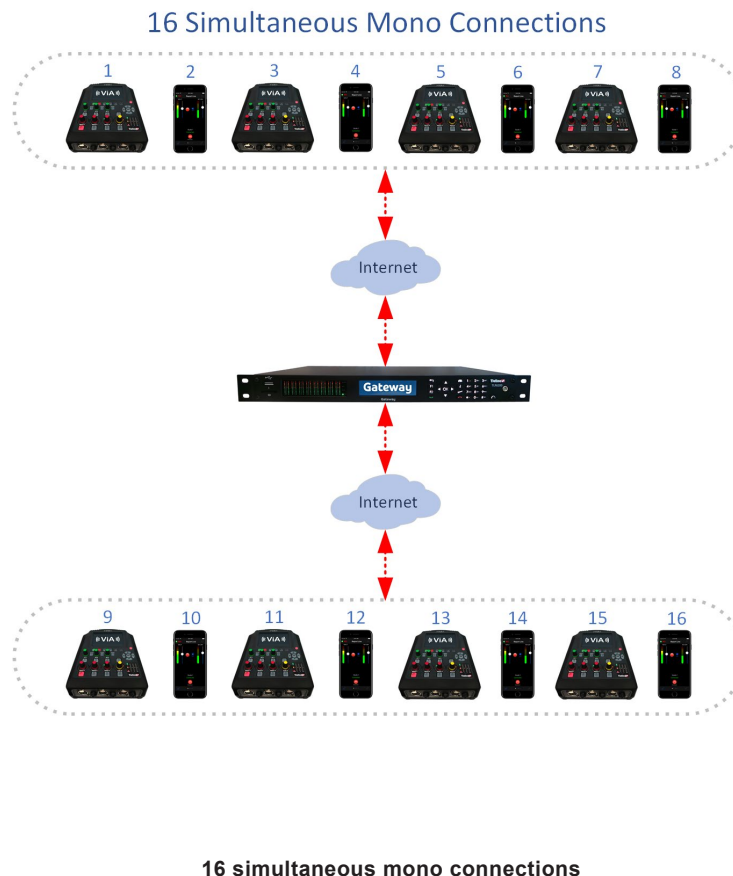
Key Features

➤ High channel density with 16 bidirectional mono or 8 bidirectional stereo IP streams

➤ 16 assignable GPIOs, plus SLIOs (Tieline and WheatNet-IP)

➤ Ideal for contribution/remotes and audio distribution applications

➤ Stream IP audio over WANs using dual Ethernet ports

➤ Fully AES67 and ST 2110-30 compliant for AoIP streaming

➤ WheatNet-IP interface option available

➤ Supports multicasting and multi-unicasting, multi-multicasting & multiple multi-unicasts

➤ Internal Solid-State Drive for record and playback [2].

➤ Dual DSP based platform with dual internal power supplies, dual Ethernet ports, dual [1] AoIP ports, and dual USB ports for firmware upgrades, memory or Wi-Fi modems.

➤ Supports uncompressed audio or a huge range of encoding options

➤ USB 2.0 port support firmware upgrades, Wi-Fi modems and USB memory sticks. USB 3.0 will support record and playback [2]

➤ SD card slot for firmware upgrades, memory and SDIO [2] options

➤ Fully SIP EBU N/ACIP 3326, 3368 and 3347 compliant to operate with 3rd party codecs

16 simultaneous mono connections

[1] only AoIP Port1 active in first release [2]Future Release

➤ Module slot for future technologies and hardware upgrades

➤ Fully remote control using the Toolbox HTML5 Web-GUI, or the Cloud Codec Controller, plus SNMP support

➤ Connect simply using the TieLink Traversal Server [2]

A Flexible Upgrade Path

The Gateway has two standard versions:

➤ Gateway supporting 8 Channels in/out (8 Mono or 4 Stereo)

➤ Gateway supporting 16 Channels in/out (16 Mono or 8 Stereo)

The codec also supports a flexible upgrade path that allows you to buy a Gateway with 8 channels and upgrade the codec over time as needs change or your network expands.

Order 8 Channels Now and Upgrade Later…

Order a Gateway with 8 channels and immediately have access to 8 input and output channels and stream up to 8 mono or 4 stereo streams of IP audio. If you need to expand channel and stream capacity, simply purchase an upgrade license and expand capacity in pairs up to 16 channels in total. Options include:

Gateway: 8 channels in/out with the following licence options or combination thereof:

➤ 2 Channel Upgrade: TLR6200-LIC1ST

➤ 4 Channel Upgrade: TLR6200-LIC2ST

➤ 8 Channel Upgrade: TLR6200-LIC4ST

Contact Tieline or your favorite dealer for pricing and to purchase an upgrade license.

WheatNet-IP

Order an optional WheatNet-IP card[2] for the Gateway when you purchase the codec. The WheatNet-IP card delivers interoperability with Wheatstone's WheatNet-IP Environment and allows codec sources and destinations to be controlled using Navigator software.
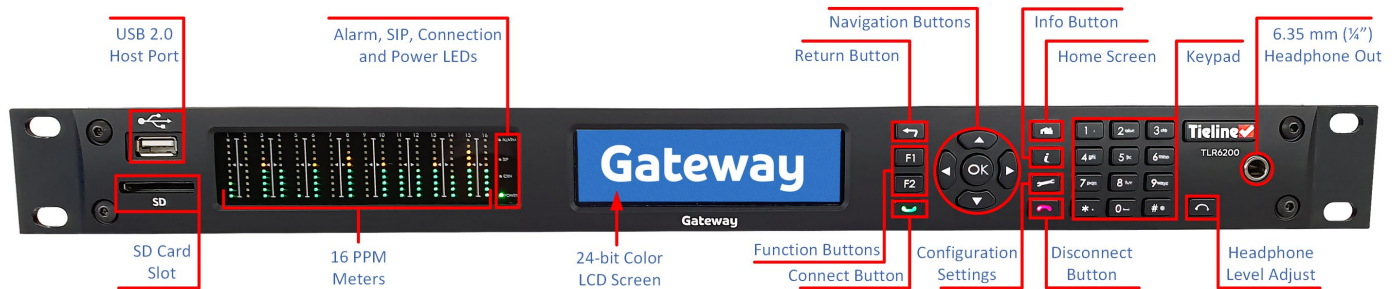

[2]Future Release

Gateway

Upgrade the Gateway to suit your network requirements
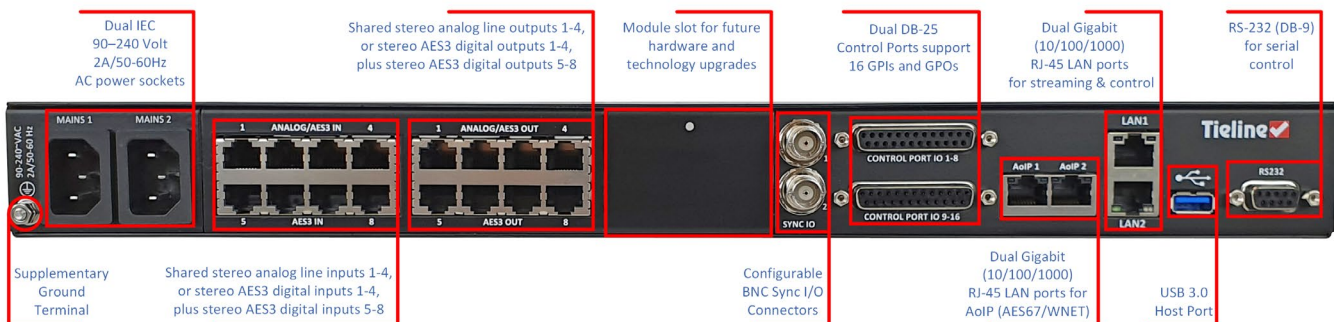

WHEATNET W IP

Optional at time of purchase

Channel Upgrades up to

16 mono or 8 stereo

Front Panel Interfaces

The Gateway front panel features a high-quality color LCD screen for at-a-glance monitoring and configuration. Silicon menu, navigation and keypad buttons deliver simple configuration, control and audio monitoring. An SD card slot and USB port allow simple access for firmware upgrades, attaching Wi-Fi USB modems, and additional memory.

Rear Panel Interfaces

The Gateway rear panel facilitates maximum flexibility with support for analog, AES3 and AES67 / ST 2110-30 I/O. Tieline also offers optional WheatNet-IP compatibility. The codec supports 16 GPIOs as well as software logic I/Os. The module slot enables future hardware innovation upgrades to maximize codec capability over time.

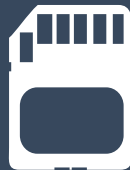[1]LAN2 Port future release   [2]Future Release
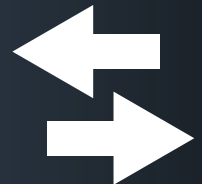
Gateway

Popular Interfaces

| Dual LAN | Dual AoIP | SD Card | 2 x USB | 16 GPIOs |

Specifications

Input and Outputs

RJ45 Analog Inputs 1-4/AES3 Inputs 1-4	Shared analog stereo line inputs 1-4, or stereo AES3 digital inputs 1-4
RJ45 Analog Outputs 1-4/AES3 Outputs 1-4	Shared analog stereo line outputs 1-4, or stereo AES3 digital outputs 1-4
RJ45 AES3 Inputs 5-8	Stereo AES3 digital inputs 5-8
RJ45 AES3 Outputs 5-8	Stereo AES3 digital outputs 5-8
Gigabit LAN Ports	2 x Gbit Ethernet ports for IP streaming over WANs (16 bidirectional mono or 8 bidirectional stereo)
Gigabit AoIP Streaming Ports	2 x Gbit Ethernet ports for AES67 or Optional WheatNet-IP streaming over LAN1 (16 bidirectional mono or 8 bidirectional stereo); port 2 not operational in first release.
USB 2.0 Host Port	Front panel host port (supports firmware upgrades, Wi-Fi USB modems and memory sticks)
USB 3.0 Host Port	Rear panel host port supports record and playback[2]
Front Panel Headphone Output	1 x 6.35mm (1/4") headphone Jack
Front Panel SD Card Slot	Full size push-pull SD card slot for firmware upgrades (Future feature: memory, or SDIO capability)
Internal SSD Storage	128GB Internal Storage for recording streams
BNC Sync Input/Output	2 configurable input/output BNC sync connectors
Control Port In/Out	Dual DB-25 Control Ports support 16 CMOS control inputs and 16 opto-isolated solid-state relay outputs
Analog Input Impedance	> 10k ohm
Analog Output Impedance	< 40 ohm balanced
Clipping Level	Nominal output level +4dBu with maximum output + 24 dBu
A/D & D/A Converters	24 bit
AES3 (AES/EBU)	24 bit inputs with support for sample rates from 32kHz to 192 kHz[2]; 24 bit outputs
Frequency Response	20Hz to 22kHz
Total Harmonic Distortion	<0.002% at +22dBu unweighted
Signal to Noise Ratio	>100dB at +24dBu, unweighted, 20Hz − 20kHz
Crosstalk	< -95dB between adjacent channels

Data and Control

Configuration and connectivity	HTML5 Toolbox Web-GUI, Cloud Codec Controller (CCC), TieLink Traversal Server[2]
Web Audio Monitoring	Selectable web audio monitoring of IP audio streams
Serial (DB-9)	RS232 up to 115kbps with or without CTS/RTS flow control can be used as a proprietary data channel
Software Logic I/Os (SLIO)	7 Tieline and WheatNet virtual inputs (1-7); 64 Tieline virtual logic outputs; and, 64 virtual WheatNet logic outputs

Encoding and IP Streaming

Encoding Formats	Tieline Music, Tieline MusicPLUS, Opus, G.711, G.722, MPEG Layer 2, MPEG Layer-3 LC-AAC, HE-AAC, HE-AACv.2, AAC-LD, AAC-ELD, 16/24 bit aptX® Enhanced algorithm[2] MPEG audio technologies licensed by Fraunhfer IIS (http://www.iis.fraunhofer.de/audio)
Uncompressed IP	Linear PCM16/24 bit 32kHz, 44.1kHz, 48kHz, 96kHz sampling
IP Sample Frequencies	8kHz, 16kHz, 32kHz, 44.1kHz, 48kHz, 96kHz
Asymetric encoding	Supports asymetric multi-format encoding
Protocols	RTP, DHCP, SNMP, DNS, HTTP, IGMP, IPv4/IPv6, RTCP, STUN, SSL Security Certificate
SmartStream PLUS	Primary plus 3 redundant streams supported (algorithm dependant) Note: only 1 redundant stream available using TieLink[2]
Multi-unicasting	Support for Multi-unicast and Multiple multi-unicast
Multicasting	Support for Multicast and Multi-multicast.
Fuse-IP	Bond IP interfaces to aggregate data

AoIP Standards & Specifications

EBU N/ACIP 3326	Audio Contribution Over IP Compliant
I3p EBU Tech 3347	Intercom Over IP Compliant
EBU N/ACIP 3368	SIP Profiles Compliant
AES67 Compliant	44.1.kHz, 48kHz, 96kHz Sample rates; 16 & 24 Bit, 1-8 Channels, SDP
SMPTE-2110 Compliant	Class A, Ax, B, Bx Sender and Receiver Compliant
Supported Audio Frames	125us, 250us, 333μs, 1ms, 4ms
Clock Modes Supported	Grandmaster, Master, Slave, Slave Only

Advanced Networking

VLAN Tagging	IEEE 802.1Q,802.1p
Quality of Service (QoS)	Support for DiffServ (DSCP)
synchronization	IEEE 1588-2008(PTPv2)
Multicasting	IGMP v2

General

Display	24-bit Color LCD Screen (480 x 128 pixels)
Keypad	26 button silicon keypad
Navigation	5 navigation and selection buttons
Size	1U x 19" Rackmount
Dimensions	19" x 1 3/4" x 11 13/16" [482mm (W) x 44.45mm (H) x 300mm (D)] excluding rear connectors
Weight	4 Kg /8 lb 13.100 oz
AC Power	Dual AC 90-240V IEC power inlets; 2A 50-60 Hz
Operating Temperature	0°C to 45°C (32°F to 113°F)
Humidity Operating Range	20% ≤ RH ≤ 70% (0 to 35°C/32°F to 95°F), non-condensing

[2] Future release

Extensive dealer network with global telephone support in 2 strategic locations around the world

Americas
Tieline America LLC
7202 E. 87th Street, Suite #116,
Indianapolis, IN 46256 USA
Direct Ph: 317-845-8000
Fax: 317-913-6915
E-mail: sales@tieline.com

International
Tieline Pty Ltd
4 Bendsten Place
Balcatta WA 6021 Australia
Ph: +61 8 9413 2000
E-mail: info@tieline.com

Tieline®
The Codec Company