Merlin

AUDIO CODEC

www.tieline.com

Tieline®
The Codec Company
Merlin (TLR5200M)

Use Merlin to deliver rock solid, high fidelity IP audio and IFB communications between the studio and a wide range of Tieline remote codecs or smartphones using Report-IT.

Flexible Applications
The 1RU Merlin rack mount IP codec is ideal for studio and remote truck installations and can deliver:

- Bidirectional stereo with a separate bidirectional IFB communication channel
- Two simultaneous mono connections with different Tieline IP codecs, or smartphones using Report-IT to save on hardware costs
- Recallable connection profiles via ‘programs’

SmartStream Reliability and Connectivity
Merlin is specifically designed to deliver remote broadcast connections over the full suite of wired and wireless IP networks. The codec features dual Gigabit Ethernet ports, redundant power supplies and IP network backup, as well as SmartStream PLUS redundant IP streaming to ensure you’re always on the air.

Merlin uses intuitive and adaptive SmartStream IP technology to adapt effortlessly to variable IP network conditions and deliver seamless bidirectional audio over wireless connections, which can be susceptible to packet loss over time.

SmartStream PLUS software has revolutionised IP broadcasting by streaming simultaneous redundant data streams from both Ethernet ports to deliver seamless redundancy over inexpensive IP links. This maintains rock solid audio over unmanaged IP networks like the internet, allowing you to perform reliable high quality remotes at a fraction of the cost of synchronous leased lines.
Some other manufacturers charge thousands for IP management software like SmartStream as if it’s an optional extra. Tieline believes high performance and rock-solid reliability is an essential part of each and every broadcast and delivers its renowned SmartStream and SmartStream PLUS software for free in Merlin.

**Compatibility**

Merlin supports both IPv4 and IPv6 (Dual Stack) protocols, so broadcasters can be assured that they have made a smart investment for the future. You can also connect over IP with any SIP enabled IP codec brand supporting the EBU N/ACIP tech 3326 standard.

It is also compliant with I3P EBU3347 requirements for interoperability of AoIP production intercoms. Optional ISDN [3] and POTS [1] module cards allow you to interface with your existing infrastructure, as your network transitions to IP.

**Algorithms**

The codec includes the low delay and cascade-resilient aptX® Enhanced algorithm, as well as other popular algorithms including the full AAC suite, variable bit-rate Opus, MPEG Layer II, MP3, Tieline Music and MusicPLUS, G.722 and G.711. Asymmetric [2] encoding and decoding lets you send high quality audio in one direction and save on data by sending low bandwidth program on the return path.

**Codec Management**

1. Use Tieline’s Toolbox web-browser Graphical User Interface to connect to your codec and configure individual codec settings over a LAN, WAN or the internet.
### Input/Output Specifications

<table>
<thead>
<tr>
<th>Input/Output</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analog Audio Inputs</strong></td>
<td>2 x Female XLR line inputs</td>
</tr>
<tr>
<td><strong>Analog Audio Outputs</strong></td>
<td>2 x Male XLR</td>
</tr>
<tr>
<td>AES3 In</td>
<td>1 x female XLR (Channel 1 in; shared with Ch1 analog input)</td>
</tr>
<tr>
<td>AES3 Out</td>
<td>1 x male XLR</td>
</tr>
<tr>
<td>Aux Input</td>
<td>1 x 6.35mm (1/4”) Mic/Line level Jack on rear panel</td>
</tr>
<tr>
<td>Headphones Out/Aux Out</td>
<td>1 x 6.35mm (1/4”) Jack on rear panel and 1 x 6.35mm (1/4”) Jack on the front panel</td>
</tr>
<tr>
<td>Sync Input</td>
<td>BNC Wordclock input</td>
</tr>
<tr>
<td>Control Port In/Out</td>
<td>Four relay inputs and four opto-isolated outputs for machine control via a DB15 connector.</td>
</tr>
<tr>
<td>Audio Input Impedance</td>
<td>High Impedance &gt; 5K ohm</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>&lt;50 ohm Balanced</td>
</tr>
<tr>
<td>Clipping Level</td>
<td>+22dBu (input and outputs)</td>
</tr>
<tr>
<td>A/D &amp; D/A Converters</td>
<td>24 bit</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20Hz to 22kHz</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>&lt;0.0035% at +16dBu or ~90dB unweighted</td>
</tr>
<tr>
<td>Signal To Noise Ratio</td>
<td>&gt;98.5dB at +22dBu, unweighted</td>
</tr>
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</table>

### Sample Frequencies

- **IP Sample Frequencies**: 8kHz, 16kHz, 32kHz, 44.1kHz, 48kHz

### Algorithms

- **IP**: Tieline Music, Tieline MusicPLUS, Opus, G.711, G.722, MPEG Layer 2, MPEG Layer-3
- **IP (uncompressed)**: Linear PCM16/24 bit 32kHz, 44.1kHz, 48kHz

### Data and Control Interfaces

- **USB**: USB 2.0 Host port on the front panel
- **LAN**: 2 x 10/100/1000 RJ45 connectors
- **Serial**: RS232 up to 115kbps with or without CTS/RTS flow control can be used as a proprietary data channel
- **Protocols**: Tieline, SIP/SDP (EBU N/ACIP 3326 compliant), RTP, DHCP, SMTP, DNS, HTTP, IGMP, VLAN, IPv4/IPv6, 13P EBU3347 Compliant
- **ISDN**: Optional via module slot
- **POTS**: Optional via module slot

### Advanced Networking

- **VLAN Tagging**: IEEE 802.1Q, 802.1p

### Front Panel Interfaces

- **Display**: 256 x 64 monochrome LCD
- **Keypad**: 21 button keypad
- **Navigation**: 5 button keypad

### General

- **PC Configuration**: User-configurable settings and matrix audio mixer** via browser-based Toolbox Graphical User Interface
- **Multilingual**: Multilingual menus and configuration software
- **Remote Control**: Compatible with Codec Management System software (optional purchase)
- **Size**: 1U x 19” Rackmount
- **Dimensions**: 19” x 1.75” x 13.5” [482mm (W) x 44mm (H) x 343mm (D) including rear connectors]
- **Weight**: 6lb 7.7oz/2.94Kg
- **Power Consumption**: Dual 100-240V IEC power inlets; 1A 50-60Hz
- **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.

** Available in later releases

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