Welcome
欢迎
Willkommen
Bienvenue
Benvenuti
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أهلاً ومرحبًا
Bem-vindos
Калъє хърватсє
Добро Пожаловать
Bienvenidos
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About Riedel Communications

Riedel Communications, founded in 1987 and headquartered in Wuppertal, Germany, is a leading supplier of real-time media networks for video, audio, and data communications. Riedel also provides comprehensive and secure IT infrastructures for events and productions worldwide. The company’s fiber-based solutions are the clear choice when reliable broadcast and A/V transport, as well as communications, are required. In the most demanding events and in the most challenging environments such as Formula 1, Eurovision Song Contest, Olympic Games, festivals, social networks, esports, and festivals, Riedel solutions provide a competitive edge in terms of versatility and performance. Riedel is also helping to further the adoption of IP standards through its membership in many of the standards organizations and involvement in industry “interops” and plugfests.

Practical Solutions from Real-World Experiences

Riedel maintains a large rental operation which enables the company to address the rental needs of its customers directly. The rental services can provide customized wired and wireless communications solutions, comprehensive IT infrastructures, and fiber-based and wireless signal transport and routing systems for sporting, event, theater, and industrial applications worldwide.

Riedel also offers extensive support services from project planning to on-site execution. “Through our rental activities we get to know our customers’ needs. It gives us the opportunity to analyze their problems and create solutions to meet their demands. At Riedel, practical solutions are developed from real-world experiences. This is a fundamental part of our corporate culture,” explains Thomas Riedel, Managing Director and founder of Riedel Communications.

Engineering made in Germany

Riedel’s products are manufactured entirely in Germany. From research and development to production, our ISO/TS 16949 processes ensure the highest levels of quality and reliability since our products are often used 24/7 in mission-critical applications.

Dear valued client,

If we at Riedel have learned just one thing after three decades in the broadcast and event technology business, it’s that we have to constantly evolve in order to remain the innovative and passionate company that you know us to be.

Our industry experiences disruptive technological change on a regular basis, providing equal amounts of excitement and headache, but also opportunity. And we expect to see even more radical changes over the coming years, both in terms of new technologies like IP and VR, and in how audiences experience and consume content.

The worlds of broadcast, sports, and entertainment are continuing to converge and we see it as our mission to help guide you through these changes, with ideas and customized solutions all from a single source. As a manufacturer and system provider with a 360-degree view, we want to be your partner now and for the future.

We look at technology from the perspective of usability. Our goal is to make life as easy as possible for you. We aspire to create solutions that perfectly fit your needs and expectations, not only in terms of the physical hardware and software, but also for service, expertise, commitment, and passion.

We also understand that the tools that you use to do your job can be complicated and we work tirelessly to create user interfaces that free you from the complex technical details and allow you to be more efficient and effective at telling unique and compelling stories.

As the former Chief Designer of Braun, Dieter Rams said, “Good design is the sum of well-resolved details.” We believe that technology should adapt to people and their needs, not the other way around.

We will continue to be innovative. We will continue to be game-changing. We will continue to be by your side, wherever the road leads.

We are 600 employees in nearly two dozen offices with six engineering hubs worldwide. We are RIEDEL.

Thomas Riedel
Creating Sustainable Value through Technology Leadership

Riedel designs solutions to meet your highest expectations and demands. That philosophy has been in place since we began nearly 30 years ago. Today, we are focusing on it more than ever, as few industries develop as dynamically as broadcast, media, and entertainment. It is now very clear that IP will be the driving force for the foreseeable future and as technological innovations are changing our market, both manufacturers and users will face new challenges.

We at Riedel have understood the need for a paradigm shift in terms of developing future integrated solutions for video and audio infrastructures, including the next generation of intercom solutions. We offer flexible solutions for today’s and future standards in the broadcast environment that are perfectly matched to your needs and expectations. We want to support this challenging paradigm shift to ensure a smooth transition for you into the new world of IP broadcast.

Riedel has always created sustainable value through technological leadership. Hence, all our current solutions are already based on IP architectures. At the same time, we continue to support all the legacy interfaces. With Riedel’s “plug and play” feature set, you will be able to continue operating our new systems like you do with our current gear. We are already introducing you, step by step, into this new world of IP-based media infrastructures. These infrastructures and more standardized hardware will help you to reduce operational costs, enhance workflow efficiency, and create more networking opportunities. And this will enable more powerful production and delivery environments.

Our flexible systems offer you an integrated approach with maximum connectivity options on your standard of choice while providing seamless workflows and ease of use. By supporting layer 1, 2 (such as AVB), and 3 (such as AES67 for audio or SMPTE 2022 for video) interfaces, we will integrate all three transport layers into one solution to maintain maximum flexibility and to achieve compatibility at the same time.

We are ready for the future. Our goal is to make your investments safe and to support you on your path towards the brave new world of IP-based media infrastructures.
MEDIORNET
REAL-TIME
MEDIA
NETWORK
**MEDIORNET**

Real-Time Network for Video, Audio, Data & Communications

MEDIORNET unlocks the true potential of fiber-optic signal transport, which will finally result in a completely new philosophy for broadcast, event, stadium and campus installations.

MEDIORNET is the next step forward in fiber-based signal transport. It combines:
- **signal transport**
- **routing**
- **signal processing and conversion**

into one integrated real-time network solution.

MEDIORNET offers a real network solution providing more than just simple point-to-point links. This includes signal routing, allowing the user to route any incoming signal to any output or even to multiple outputs with just a mouse-click or, even more conveniently, by using a router control system. As a result, MEDIORNET increases the flexibility of any installation while significantly reducing cabling and set-up time. MEDIORNET eliminates the need for re-wiring when production setups change.

**MEDIORNET – Features**

- Fiber signal transport for SD/HD/3G/HD-SDI video, audio, data & intercom
- Supports any combination of network topologies
- Integrated CWDM multiplexing
- Uncompressed real-time signal distribution and routing
- Supports 3rd-party router control
- Integrated signal processing and conversion
- System architecture provides full redundancy including auto re-route
- Future-proof hardware platform

MEDIORNET also includes integrated broadcast-quality processing and conversion features like Frame Store / Frame Synchronizers and Embedders / De-Embedders at any input / output. These features are software-based so they can easily be expanded in the future without any hardware changes. Ultimately this will eliminate the need for external devices. All this results in a completely new approach to production environments, providing significant savings in infrastructure investments.

The MEDIORNET family consists of the signal interfaces MicroN and Compact, as well as the MetroN core router. Together they form a fully-modular and scalable system that can be customized to meet any requirement.

**MEDIORNET – Key Benefits**

- Integration of various infrastructures into one network provides significant savings in cabling and infrastructure investments
- Network approach with point-to-multipoint routing capabilities increases the installation’s flexibility
- MEDIORNET’s flexibility allows versatile usage and quick adaption to new production needs
- Integrated signal processing eliminates external glue hardware and again increases the installations flexibility
- Software-based feature set is expandable and makes MEDIORNET a secure long-term investment
- German engineering and quality manufacturing

**Signal Transport with MEDIORNET**

**Network Topology**

MEDIORNET has an open topology, supporting ring, star, daisy-chain or any combination thereof. This allows the user to design the system exactly to his requirements.

**Bandwidth Optimization**

The bandwidth of the MEDIORNET carrier frame is 10.31 Gbit/s (net 9.83 Gbit/s). This carrier frame is then divided into subframes with 6.4 Mbit/s bandwidth, which corresponds to the smallest signal transport, AES/EBU audio.

These subframes can be filled with any type of data such as video, audio, intercom and control. Each native signal is sliced into 6.4 Mbit/s segments. MEDIORNET transports these slices to one or multiple destinations where MEDIORNET recreates the native signal.

MEDIORNET’s routing algorithm is always looking for the shortest path to transport a signal and optimizes the bandwidth of all fiber links available. This includes hops over other MEDIORNET nodes, when no direct fiber connection from the source to the destination is available.

**Synchronization**

MEDIORNET can be synchronized to any external sync source or serve as a sync master for the complete installation. MEDIORNET supports the following sync standards:

- Blackburst NTSC, Trilevel 720p25, Trilevel 1080p25
- Blackburst PAL, Trilevel 720p24, Trilevel 1080p25
- Blackburst, Trilevel 720p50, Trilevel 720p59.94, Trilevel 1080p50, Trilevel 1080p59.94, WordClock 48kHz, Trilevel 720p25, Trilevel 1080p25, WordClock 59.94kHz, Trilevel 720p29.97, Trilevel 1080p30, WordClock 96kHz
MediorNet Applications

Less cabling by combining the basic infrastructures

- Video
- Audio
- Intercom
- Data
MEDIORNET – Integrated Signal Processing and Conversion

MediorNet provides broadcast quality processing and conversion on board. What in the past required additional external equipment is integrated within the MediorNet system. The open structure of the software allows for the easy integration of future processing and conversion tools from Riedel or 3rd party manufacturers supporting the MediorNet standard, without any changes to the hardware.

MN Frame Store / Frame Synchronizer

MediorNet Frame Store / Frame Synchronizer allows the user to sync all independent free running signals to the same reference (Blackburst or TriLevel) and offers automatic audio-delay adjustment.

MN Quad Split

The MediorNet Quad Split provides high-quality quad viewing of 3G/HD/SD-SDI signals (in any combination). Configuration is achieved conveniently via the MediorWorks Software.

MN Video Format Converter

The MediorNet Video Format Converter offers low latency up, down and cross conversion including ARC for multi-rate 3G/HD/SD-SDI signals. Its next generation motion adaptive de-interlacing and scaling technology guarantees high image quality.

Video Output Phase Shift

The video output phase shift feature is used to shift the the start of the video playout with respect to the genlock. The shift can be lagging (positive values) or leading (negative values). The genlock itself either locks to the reference or to the genlock itself. The shift can be lagged (negative values) or leading (positive values). The genlock itself either locks to the reference or to the connected video input.

Video Input and Output Phase and Delay Measurements

These features are used for measuring the total delay between video input signal and video output as well as for showing the time difference between start of video input and reference. Delay and phase values are displayed in microseconds. Using the Video Input to Output Delay Measurement in combination with the video output phase shift you can adjust your video transport in a way to achieve minimum overall transport latency.

MEDIORWORKS – Intuitive Real-Time Configuration, Control & Monitoring

The intuitive configuration, control and monitoring software MediorWorks can be downloaded from any MediorNet mainframe via the configuration port of the processing card. This way you always have access to the correct software version of a specific installation. The software is a Java®-based application, allowing any computer with a Java® runtime environment such as Windows, Mac OS X or Linux to serve as the host for the application. MediorWorks auto senses the configuration and status of the system it is connected to. Five windows give easy access to any aspect of the MediorNet installation. All windows are visible at the same time. Alternatively, they can simply be accessed with one click on the “Views” window, which is floating above all other windows. The “Device Browser” shows all available nodes, the cards installed in the node and each connector of the specific media card. If a connector is selected, the “Connections” window shows all active connections signal routings. A “Matrix View” allows for a quick overview of all connections including matrix-style programming. Looking into the “Parameters” window of a link card gives access to the fiber usage of a specific fiber link. In the “Parameters” view of a media card you can see and adjust the signal format, force the input or output to a certain format and configure the processing and conversion features available within MediorNet. Detailed “Logging” and “Alarm” views complete the software’s feature set. Detailed user rights management and user specific view modes allow for easy and secure operation.

MediorWorks at a Glance:

» Java® Runtime application downloadable from any MediorNet Frame
» Auto sensing – no need for manual configuration
» Real-time monitoring and control of the complete network
» Intuitive, clearly managed windows with quick access to any information via list filters
» Manual and automatic routing
» Multi-user support
» Matrix view
» User templates
» Graphical Network Topology View

Third Party Control Systems

Riedel’s MediorNet allows for seamless integrations with third-party control and monitoring systems. A well-established range of control protocols, including Probel SW-P-08, Ember+, and SNMP, is implemented by default in MediorNet and enables users to address their specific control and monitoring requirements.

Due to its open design, users have various options to monitor and control MediorNet via third-party solutions. These include L-A’s VSM, AXON’s Cerebrum, BFE’s KSC Commander, Atos’ BCNS, Skyline’s DataMiner and many more.

This open philosophy enables users to integrate MediorNet quickly and easily into existing workflows, while simplifying and optimizing the overall user experience.
MEDIORNET MicroN

MediorNet MicroN is software-enabled, app-based hardware that can be many different things: It can be a throw-down signal processor, a simple point-to-point link for up to 12 bidirectional HD signals, or part of a large de-centralized router – but it can even serve as a MultiViewer or a bridge between MediorNet networks and IP networks!

As an 80G media distribution network device for Riedel’s MediorNet line of media transport and management solutions, MicroN works seamlessly with the MediorNet MetroN core fiber router. MicroN is a high-density signal interface with a complete array of audio, video, and data I/Os. These include 24 SD/HD/3G-SDI I/Os, two MADI optical digital audio ports, a Gigabit Ethernet port, two sync reference I/Os, and eight 10G SFP+ high-speed ports.

MicroN is available as a fully networked MediorNet device, as well as a point-to-point edition at a very competitive price point.

In just 1RU, MicroN offers a highly versatile signal interface that can be used in productions of every size and complexity. For the largest media networks built on MediorNet transport devices, MicroN can serve as a breakout box for a MetroN router and extend connectivity beyond the fiber I/Os to any type of video and audio I/O required. Furthermore, MicroN can simply work with a MetroN router, with other MicroN units, or in a standalone point-to-point configuration to provide an economical solution for small- to medium-sized productions. And, like the other MediorNet devices, MicroN has powerful built-in signal processing features that eliminate the need for many external devices.

MicroN – Features
- 10G (4x25G) Link bandwidth
- 3G-SDI video
- 2x MADI audio
- Gigabit Ethernet
- Synchronization (Black Burst, Tri-level, Word Clock)
- Redundant, wide-range AC power supply

MicroN – Integrated Signal Processing
- Automatic format detection
- Frame Store / Frame Synchronizer
- 10-channel Audio Embedder / De-Embedder
- Test Pattern Generator
- On-screen and system VITC displays,
- Integrated Sample-Rate Converter
- Audio/video Delay Lines

Apps for MicroN

MicroN provides a high degree of flexibility in addressing the current and future demands of broadcast and live event productions. With a total of five powerful apps, MicroN gives you greater freedom in building sophisticated media infrastructures, from signal transport to full video router functionality and signal processing. The concept of decentralized, hybrid routing and signal transport provides a future-proof and risk-free transition between baseband and IP workflows. Moreover, it significantly reduces system cost and complexity by giving users the freedom to place signal I/Os exactly where they are needed.

Point-to-Point App for MicroN

The Point-to-Point App for MicroN enables all hardware ports on the device. The size of the network is limited to one or two devices in one net to use MicroN in point-to-point mode or standalone mode. The app provides all of MicroN’s customary capabilities plus support for up to 12 bidirectional SDI I/Os, two MADI I/Os, and a Gigabit Ethernet link. Not only does the app enable the hardware to operate standalone, but a single MicroN can act as 12x12 router and audio embedder / de-embedder with MADI and sync delay, while also providing video frame sync and delay.

Standard App for MicroN

The Standard App for MicroN enables all hardware ports and provides unlimited network capabilities. It allows to interconnect MicroN nodes in a meshed fashion, making it a very scalable, decentralized video routing application. This approach can be used as a replacement for small to medium sized routers and offers a very flexible system design, allowing you to extend the router capacity in both signal capacity and distributed system locations by adding MicroN nodes to the network. Multiple MicroNs can be integrated as a single central video router for redundant processing of up to 192x192 HD-SDI signals, or can be deployed in a distributed fashion as a decentralized video router.
The MediorNet MicroN IP App is the next step for the MediorNet ecosystem. With several I/O options and complete flexibility in placement, MediorNet MicroN IP can create IP endpoints anywhere in an installation to create a truly hybrid signal transport and processing environment.

**MicroN – IP App**

- Full MediorNet integration
- IP video and audio streams are treated like native MediorNet signals
- Flexible MicroN App switching
- Hybrid migration from baseband centric to IP centric workflows
- Full standard-compliant implementation of SMPTE ST2110 (AES67)
- Supports latest specifications of NMOS IS-04 and IS-05

The MediorNet Processing App adds decentralized and powerful processing capabilities to every MediorNet infrastructure. Built on the 80G media distribution hardware, Riedel’s new app is a virtual resource for signal processing and is designed to work within MediorNet networks, enabling on-board signal-processing including frame synchronization, embedding/de-embedding, and delays. Each input signal can be routed to this virtual resource to be processed and played out at any output within the system.

**MicroN – Processing App**

- 2 channel up-down/cross conversion
- 4 channel color correction (YCbCr + RGB)
- MultiViewer with 9 PiP and 2 screens
- 4 channel color correction (YCbCr + RGB)
- Flexible access to an MediorNet input signal
- 18 channel processing (full flexible scaling and positioning)
- 4 virtual screens to be routed to any MediorNet output
- Network synchronized clocks (analog, digital) and counters
- New MultiViewer App for MicroN
- Images
- Easy and intuitive configuration via drag-and-drop editor
- 3rd party control via TSL 5.0 and Ember
- Netwide configuration storage concept

**MultiViewer App for MicroN**

The MultiViewer App adds decentralized multiviewing capabilities to the MediorNet ecosystem. The virtual MultiViewer App is based on the MediorNet MicroN high-density media distribution hardware and is designed to work within MediorNet networks. Each single MediorNet MultiViewer engine can access any MediorNet input signal and process up to 18 signals. These can be flexibly placed on four virtual screens, which can be routed to any destination within the MediorNet system and output at alternative locations. The MultiViewer device provides local signal inputs and outputs to offer further connectivity options like playing out the virtual MultiViewer screens locally on the device.

MediorNet MultiViewer has powerful processing features including flexible scaling, positioning, as well as the ability to incorporate graphics (like logos and background images) and special ‘widgets’. ‘Widgets’ include tallies, under-monitor displays, audio level meters, and several clocks and counters. Clocks can be analog or digital and can reference system time or timecode, with the timecode derived manually or from LTC or NTP. Finally, up to 20 distributed system counters can be established within a single network, and any counter widget can reference any one of the system counters. All of these functions are controllable via the Ember+ control protocol. In addition, tallies and under-monitor displays can be controlled via TSL 5.0.

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The MediorNet Processing App delivers the benefits of a decentralized signal network by enabling processing hardware to be placed anywhere it’s needed, leveraging the network for sources and reducing system complexity.

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- 3rd party control via TSL 5.0 and Ember
- Netwide configuration storage concept

**Processing App for MicroN**

The MediorNet Processing App adds decentralized and powerful processing capabilities to every MediorNet infrastructure. Built on the 80G media distribution hardware, Riedel’s new app is a virtual resource for signal processing and is designed to work within MediorNet networks, enabling on-board signal-processing including frame synchronization, embedding/de-embedding, and delays. Each input signal can be routed to this virtual resource to be processed and played out at any output within the system.

The MediorNet Processing App delivers the benefits of a decentralized signal network by enabling processing hardware to be placed anywhere it’s needed, leveraging the network for sources and reducing system complexity.

**MicroN – Processing App**

- 2 channel up-down/cross conversion
- 4 channel color correction (YCbCr + RGB)
- MultiViewer with 9 PiP and 2 screens
MediorNet Compact is the cost-effective and easy-to-use entry to the Riedel MediorNet world of integrated media signal distribution and processing. It is the first fiber-based 21st century stagebox providing the flexibility of a true real-time media network including integrated signal processing at the cost of simple multiplexing point-to-point products. With a network bandwidth of 50 Gbit/s MediorNet Compact provides enough capacity for bi-directional transport of 12 HD-SDI signals, dozens of MADI streams or GBit-Ethernet signals and hundreds of audio channels or intercom ports – ideal for streamlining the infrastructure of any mobile, studio or live event application.

MediorNet Compact – Features

- Cost-effective fiber signal transport for 3G/HD/SD-SDI video, audio, data & intercom
- Synchronized real-time network for the price of multiplexing point-to-point fiber products
- Supports any combination of network topologies
- Flexible signal routing incl. point-to-multi-point
- 50 Gbit/s network bandwidth (net 39 Gbit/s)
- Fully compatible with MediorNet Modular systems
- Integrated signal processing available at every port: Frame Store / Frame Synchronizer, Embedding/De-Embedding, Test Pattern Generator, Caption, Timecode Insertion

Option Boards:

- MN-C-OPT-SDI-4I4O (4x SDI In / 4x SDI Out)
- MN-C-OPT-SDI-8I (8x SDI In)
- MN-C-OPT-SDI-8O (8x SDI Out)

Fiber Options:

- 25G WDM Neutrik opticalCON QUAD™
- 8.5G Neutrik opticalCON QUAD™
- 4.25G Neutrik opticalCON DUO™
- 8.5G Dual LC Duplex™
- 4.25G Dual ST™

For more devices from the Smart Rack series please refer to the “Fiber Accessories” section.
Integrated Signal Processing and Conversion

MediorNet Compact provides broadcast quality processing and conversion on board. What used to require additional external equipment is already integrated within the MediorNet system.

**MN Frame Store / Frame Synchronizer**
MediorNet Frame Store / Frame Synchronizer allows the user to sync all independent free running signals to the same reference (Blackburst or TriLevel) and offers automatic audio-delay adjustment.

**MN Embedder / De-Embedder**
The 16 channel MediorNet Embedder / De-Embedder embeds, de-embeds and shuffles any AES3/EBU signal.

**MN Test Pattern Generator**
The MediorNet Test Pattern Generator provides standard 100% and 75% colour bars for all video inputs as well as user defined patterns for all video outputs in all common formats in NTSC and PAL.

**MN Timecode Insertion**
The MediorNet Timecode Insertion provides and distributes a timecode via Blackburst sync signal. The Timecode Insertion features runtime compensation and offers an on-screen timecode display.

**MN Caption**
The MediorNet Caption provides free configuration of position, size, and display of any user defined text.

**Video Output Phase Shift**
The video output phase shift feature is used to shift the start of the video playout with respect to the genlock. The shift can be lagging (positive values) or leading (negative values). The genlock itself either locks to the reference or to the connected video input.

**Video Input and Output Phase and Delay Measurements**
These features are used for measuring the total delay between video input signal and video output as well as for showing the time difference between start of video input and reference. Delay and phase values are displayed in microseconds. Using the Video Input to Output Delay Measurement in combination with the video output phase shift you can adjust your video transport in a way to achieve minimum overall transport latency.

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**Specifications MediorNet Compact**

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<thead>
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<th>MediorNet Compact BASIC</th>
<th>MediorNet Compact PLUS</th>
<th>MediorNet Compact PRO</th>
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<tr>
<td>Video In</td>
<td>2 x 3G/HD/SD-SDI</td>
<td>2 x 3G/HD/SD-SDI</td>
<td>8 x 3G/HD/SD-SDI</td>
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<tr>
<td>Video Out</td>
<td>2 x 3G/HD/SD-SDI</td>
<td>2 x 3G/HD/SD-SDI</td>
<td>4 x 3G/HD/SD-SDI</td>
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<tr>
<td>Slot for Option Boards</td>
<td>4 x 3G/HD/SD-SDI</td>
<td>4 x 3G/HD/SD-SDI</td>
<td>4 x 3G/HD/SD-SDI</td>
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<tr>
<td>Option Boards</td>
<td>MN-C-OPT-SDI-8I</td>
<td>MN-C-OPT-SDI-8I</td>
<td>MN-C-OPT-SDI-8I</td>
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<td>DisplayPort Out</td>
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<tr>
<td>AES3/EBU</td>
<td>2x</td>
<td>2x</td>
<td>4x</td>
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<td>Audio In (analog)</td>
<td>2x</td>
<td>2x</td>
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</tr>
<tr>
<td>Audio Out (analog)</td>
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<td>4x</td>
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<tr>
<td>BackNet Interface</td>
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<tr>
<td>MADI (SFP)</td>
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<td>3x</td>
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<tr>
<td>Sync In / Out</td>
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<td>1x / 1x / 1x Out</td>
<td>1x / 1x / 1x Out</td>
</tr>
<tr>
<td>Synchronization</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall**

- **Operating Temperature**: -10°C to +55°C (-14°F to +131°F)
- **Power Consumption**: 85 W
- **Dimensions (h x w x d)**: 153 mm x 483 mm x 241 mm (3 RU x 19" x 9.5")
- **Weight**: 8.2 kg (18.1 lbs)

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**Redundant Fiber Optic Ring**
MediorNet Compact equipped with 25G Neutrik opticalCON QUAD connectors provides integrated WDM multiplexing and allows quick and easy set-up for bi-directional signal transport.

**Redundant Fiber Optic Ring**

- 25 Gbit/s bandwidth (net 20 Gbit/s)
- 4-way redundant signal
- 50 Gbit/s bandwidth (without redundancy)

**Synchronization**
MediorNet Compact can be synchronized to any external sync source or serve as a sync master for the complete installation. MediorNet Compact supports the following sync standards:
In enabling Riedel’s acclaimed networked approach to signal distribution and routing, the 2-RU large-scale MediorNet MetroN Core Router provides intense real-time signal-routing capacity (32x10G/32x4.25G ports) and offers non-blocking switching.

MetroN provides robust video router functionality with switching delays of ~40ms as well as high-speed re-routing that allows as many as 1,000 connections to be re-routed in less than a second. A single MetroN allows for building video routers with up to 192 HD-SDI and theoretically an unlimited number of outputs. Router control can be done with MediorWorks software as well as with most 3rd party control systems using the Probel or Ember+ protocol. The frame can function within a larger MediorNet installation, interfacing with other MediorNet frames via fiber.

The addition of the MetroN core router increases the bandwidth available across MediorNet networks. It is the first solution of the MediorNet family, where the connection is realized by means of 10G links. Up to 6 HD-SDI signals can be transmitted over one 10G connection. Typical applications for the router include the connection of MediorNet subnets, studio backbones, routing within a 3G-SDI studio infrastructure and supporting networked OB vans.

MediorNet system combines signal transport, routing, signal processing, and conversion into one integrated real-time network solution. With this network for video, audio, data, and communications, users can send any incoming signal to any output— or even to multiple outputs— with just a mouse-click or, even more conveniently, by using a router control system. Eliminating the need for re-wiring when production setups change, MediorNet increases the flexibility of any installation while significantly reducing cabling and setup time. Integrated broadcast-quality processing and conversion features reduce or eliminate the need for external devices, in turn helping users to realize significant savings in infrastructure investment.

### MetroN – Key Benefits

- Video router functionality
- Rackspace savings
- Cost savings
- Increased bandwidth and routing capacity
- Router control via MediorWorks or 3rd party control systems using the Probel or Ember+ protocol.

### MetroN – Features

- 32 10G ports / 32 4.25G ports
- Auto-sensing of all ports (4.25G / 10G)
- 2 Ethernet ports plus 1 config port
- 1 Sync Input / 2 Sync Outputs
- Redundant power supplies and fan modules
- Robust high-speed video switching with delays < 40 ms
- Rack-mounting in various positions (connectors at the front / rear and recessed)
In addition to its fiber-based real-time network solution MediorNet, Riedel offers a range of accessories solving everyday issues in fiber installations. The Riedel Smart Rack offers a flexible, versatile and easy-to-use solution. The Smart Rack Suite consists of WDM and CWDM Multiplexers and De-Multiplexers as well as RF over fiber converters and patch modules.

MC-WDM Dual WDM Multiplexer and De-Multiplexer

The Riedel MC-WDM interface is 4.74” wide (SR11 housing) and provides two multiplexer/de-multiplexer for multiplexing/de-multiplexing up to three LC duplex single-mode fiber links each onto one LC connector (MC-WDM-L) or onto the two fiber pairs of one Neutrik opticalCon Quad fiber connector (MC-WDM-Q).

MC-CWDM CWDM Multiplexer and De-Multiplexer

The Riedel MC-CWDM interface is 9.5” wide (SR12 housing) and offers multiplexing and de-multiplexing capabilities over one duplex fiber link for up to 18 LC duplex single-mode connections of different standards. The multiplexed signal is available on either an LC connector (MC-CWDM-L) or on a Neutrik opticalCon Quad connector (MC-CWDM-Q). The MC-CWDM also features a separate LC duplex connector. In the LC version this serves as a coupler for two LC fibers, in the opticalCon Quad version this connector provides access to the second pair of fibers of the opticalCon Quad cable.

MC-QP opticalCon Patch Module

The Riedel MC-QP series provides easy patching of Neutrik opticalCon Quad fiber cables with LC Duplex fiber cables and vice versa.

WDM/CWDM Multiplexing Modules

**MC-WDM-Q**

WDM Dual Multiplexer and De-Multiplexer (passive) for up to 6 duplex fiber connections, also recommended for interconnecting MediorNet frames. WDM connection with Neutrik opticalCon Quad single-mode. The 6 duplex fiber links must be connected via WDM single-mode SFPs 1310nm/1490nm/1550nm (SFP modules not included), Insertion Loss max. 6.9dB. Output Loss max. 2dB. Compatible with MediorNet Compact WDM options MN-Cxxx-WDM. SR11 housing for up to 4 modules in one SR-1 module carrier frame. All connections on the same front panel.

**MC-WDM-L**

WDM Dual Multiplexer and De-Multiplexer (passive) for up to 6 duplex fiber connections, also recommended for interconnecting MediorNet frames. WDM connection with Dual LC Duplex single-mode. The 6 duplex fiber links must be connected via WDM single-mode SFPs 1310nm/1490nm/1550nm (SFP modules not included), Insertion Loss max. 6.9dB. Output Loss max. 2dB. Compatible with MediorNet Compact WDM options MN-Cxxx-WDM. SR11 housing for up to 4 modules in one SR-1 module carrier frame. All connections on the same front panel.

**MC-CWDM-Q**

CWDM Multiplexer and De-Multiplexer module (passive) for up to 18 duplex fiber connections, also recommended for interconnecting MediorNet frames. CWDM connection with Neutrik opticalCon Quad single-mode. The 18 CWDM duplex fiber links must be connected via CWDM single-mode SFPs 1271nm; 1291nm; 1311nm; 1331nm; 1351nm; 1371nm; 1391nm; 1411nm; 1431nm; 1451nm; 1471nm; 1491nm; 1511nm; 1531nm; 1551nm; 1571nm; 1591nm; 1611nm (SFP modules not included). SR12 housing for up to 2 modules in one SR-1 module carrier frame. All connections on the same front panel.

**MC-CWDM-L**

CWDM Multiplexer and De-Multiplexer module (passive) for up to 18 duplex fiber connections, also recommended for interconnecting MediorNet frames. CWDM connection with Dual LC Duplex single-mode. The 18 CWDM duplex fiber links must be connected via CWDM single-mode SFPs 1271nm; 1291nm; 1311nm; 1331nm; 1351nm; 1371nm; 1391nm; 1411nm; 1431nm; 1451nm; 1471nm; 1491nm; 1511nm; 1531nm; 1551nm; 1571nm; 1591nm; 1611nm (SFP modules not included). SR12 housing for up to 2 modules in one SR-1 module carrier frame. All connections on the same front panel.

**MC-CWDM4-L**

CWDM Multiplexer and De-Multiplexer module (passive) for up to 4 duplex fiber connections, also recommended for connecting MediorNet frames. CWDM connection with one LC Duplex Singlemode. The 4 CWDM duplex fiber links must be connected via CWDM Single Mode SFPs 1270nm | 1290nm | 1310nm | 1330nm, Insertion Loss max. 1.4dB. SR11 Smart Rack housing for up to 4 modules in one SR-1 frame. All connections on the same front panel.

**MC-QP**

Patch module for Neutrik opticalCon Quad on 2 LC Duplex. SR11 Smart Rack housing for up to 4 modules in one SR-1 frame. All connections on the same front panel.
With the MediorNet KVM Extenders (MN-KVM-PC & MN-KVM-MON), Riedel extends the functionalities and applications of MediorNet. Besides audio, video, data and intercom signals, MediorNet now transmits KVM signals.

The DVI interface supports transmission of full HD video signals (max. 1920x1200 @ 60Hz), whereas the transparent USB 2.0 interfaces connect keyboard, mouse, printer, smart card readers and USB memory devices. On top of that, the device allows for bidirectional analog stereo audio transmission.

MN-KVM-MON (remote)
- Video: 1x DVI-I out
- USB 2.0: 4x USB-A (devices)
- Audio: 1x 3.5mm jack socket (Line In) 1x 3.5mm jack socket (Speaker)

MN-KVM-PC (local)
- Video: 1x DVI-I in (no HDCP) 1x DVI-I out
- USB 2.0: 1x USB-B (PC)
- Audio: 1x 3.5mm jack socket (Line In) 1x 3.5mm jack socket (Speaker)

Riedel PURE
The Heavy Duty Fiber Cable for Demanding Applications

Based on Riedel’s extensive experience in demanding rental projects such as Olympic Games, Formula 1 or the Eurovision Song Contest, Riedel designed a fiber optic cable that meets the highest demands in event & mobile productions. With PURE, clients directly benefit from this expertise.

Riedel Pure CS is available in 10m / 200m (optional on GT380 cable drum) / 300m (opt. on SK4731-R) / other cable lengths on request.

Riedel Pure XT is available in 10m / 100m (optional on GT380 cable drum) / 150m (opt. on GT450) / 300m (opt. on SK4731-R) / other cable lengths on request.

**PURE – Features**
- Extremely rugged TAC (Tactical) fiber cable
- Very flexible, abrasion & chemical resistant PUR jacket
- Low bending radius (GLISTENA specified)
- No waterpeak – fully CWDM and DWDM applicable
- Exclusively with Neutrik opticalCON QUAD or opticalCON DUO connectors
Performance Audio Networks

RockNet is a real-time, low latency audio distribution network tailored to tour and installed sound applications. RockNet provides a universal solution to almost any imaginable audio distribution challenge and behaves very much like a traditional analog split system. It comes up to 160.24 bit/48 kHz audio channels counter-rotating on a single CAT5 cable. RockNet products are designed for heavy-duty road use. Their ruggedized steel enclosures resemble the look and feel of a modular stagebox. All devices feature locking IEC connectors for the redundant power supplies. All other connectors are entirely gold-plated and the circuit design is streamlined for ultra low noise and minimum distortion to meet the highest demands in audio quality.

RockNet is a genuine audio network platform designed purposely for live sound applications. It is a cost-effective, integrated networking product invented, designed, and optimized for audio contribution and distribution. RockNet provides ultra low latency and very high audio quality. It is an integrated system that does not require any third party products. Only two types of cables are necessary to hook up a network: microphone cable with XLR (male/female) and CAT5 with RJ45 (Ethercon®). RockNet devices do not require breakout panels or any special cables and connectors. Up to 99 devices can be easily added to the network. All devices can be configured intuitively by front panel push buttons. No particular IT or computer networking know-how is needed to set up and operate RockNet. Even a system check can be performed within a few seconds at each device even without using a computer.

RockNet incorporates a streamlined redundancy concept on the device and network levels. The network interface of each device features two interconnections for fail-safe transmission of audio signals on CAT5 infrastructure. Based on a redundant ring topology, RockNet forms a self-healing network with no loss of audio in case of a connection fault between two devices.

ROCKNET – Features

- 160 channels
- Up to 99 devices in one network
- CAT-5 redundant network interface
- Independent Gain
- Front panel operation
- Redundant power supplies
- 48 kHz or 96 kHz sample rate
- Status indicators (LEDs)
- Remote Control

User Concept

Control Section

The control section of all 19” RockNet products provides the controls to set up and configure the unit without a computer. It incorporates three two-digit displays and six push buttons that are used for intuitive operation of a three level menu:

Default mode, Channel mode, Options mode.

Options mode displays the status of the device when the system is in normal operation and shows:
- select primary / secondary master
- select sync source [internal / external wordclock / digital input #]
- select sample rate [48kHz / 96kHz]
- lock-out front panel operation
- switch off display
- display device temperature

LED indicators are provided for the redundant power supply and network connectivity status, master selection, external sync and sample rate.

Network Interface

The network interface incorporates Riedel’s proprietary core technologies. Lateral™ ultra-low latency asynchronous transmission enables RockNet to support various redundant network topologies and to provide real-time, isochronous data transport in conjunction with packetized data such as TCP/IP. The data rate is 400 Mbits/s on a CATS cable and the number of nodes is limited to 99. Concrete™ clock recovery and jitter rejection utilizes a unique digital PLL structure. Jitter magnitude, spectrum and probability distribution are de-randomized by a sophisticated digital modulation scheme, resulting in an extremely high jitter rejection and zero jitter build-up through the network.

Two Ethercon® RJ45 network connectors link to an upstream and a downstream neighbor in a redundant ring topology. These two connectors can also be used to provide a parallel link in case of point-to-point network scenarios.
Independent Gain

Independent gain as an integrated solution, i.e. without using an additional passive splitter, is a highly desired feature in digital live sound environments (digital mixing consoles in combination with digital audio networks).

Where more than one console is required in analog setups and even with digital mixing consoles, a passive splitter is the most common solution to enable the monitor mixer and the FOH mixer to independently set the gain according to their respective requirements.

In RockNet audio networks the Independent Gain of all devices is a fully integrated solution. The RockNet Independent Gain function can be used in conjunction with digital mixing consoles equipped with RockNet interface cards or any other supported mixing console integrated via the RN.334.MD MADI interface.

RockNet Remote Control Software

**ROCKWORKS**

**ROCKWORKS – Features**

- Full integration into MediorWorks
- Full remote control of RockNet
- Connection to any RockNet device (incl. console interfaces)
- Multiple PC connectivity
- Independent Gain
- Offline editor incl. consistency check
- Display of all network devices and routings
- Level meters
- Ethernet tunneling
- Master resolve function
- Network alarm indications
- Labeling of RockNet devices and channels
- Network default reset
- Status indicators
- Snapshots
- Remote channel parameter control
- Windows and Mac OS X

RockWorks is a real-time management system for RockNet and enhances the remote operation of complex widespread networks. Each RockNet device can be monitored and configured on screen according to the front panel operation. RockWorks enables labeling of each device and channel within the network. The software provides alarm indications and allows for a network-wide default reset of channel parameters and naming. For a more comfortable setup, RockWorks also features an offline editor.

RockWorks MY Card Preset Dialog

The RockWorks preset dialog provides full access to RockNet MY interface card presets and allows for the individual configuration of emulation mode, channel routing, microphone pre-amp count (RN.301.MI/RN.101.IO) as well as sync master settings.

A total of 15 presets (1…9, A…F) can be configured. Presets are activated by using the rotary switch on the front panel of the RockNet MY cards.

In order to enable maximum flexibility in routing, the number of dropped channels from the network (sent to the mixing console) as well as the number of added quads to the network (dropped from the mixing console) can be individually adjusted to specific needs, e.g. direct connections between monitor and FOH consoles. Even more flexibility is added by the ability to determine the number of remote controlled RN.301.MI microphone pre-amps and by providing sync master settings.

The MY emulation mode can be individually set to 16 (MY-16AT) or 8 channel emulation (MY-8AS).
ROCKNET 300 Analog Modules

RN.301.MI  
Microphone Line Input Interface  
The RN.301.MI provides 8 remote controllable microphone line input channels on XLR connectors. The state of the art circuitry is designed to fulfill the highest demands in dynamic range, common mode rejection and overall audio quality.

RN.302.LO  
Line Output Interface  
The RN.302.LO provides 8 analog line output channels on XLR connectors that can drive any amplifier or powered speaker to a maximum level. Mute relay is activated during power on/off. Output redundancy is offered to drive a single amplifier from two different RN.302.LO devices.

ROCKNET 300 Digital Modules

RN.331.DD  
Digital Input/Output Interface  
The RN.331.DD provides four AES/EBU inputs and four AES/EBU outputs on XLR connectors.

RN.332.DO  
Digital Output Interface  
The RN.332.DO provides eight AES/EBU outputs on XLR connectors.

RN.335.DI  
Digital Input Interface  
The RN.335.DI provides eight AES/EBU inputs on XLR connectors. The interface also features on-board sample rate conversion.

RN.334.MD  
MADI Interface  
The RN.334.MD module provides two MADI interfaces with electrical and optical* inputs and outputs. It offers connection to any digital mixing console, recording system and audio routing environment. The module supports both 56 and 64 channel MADI format. The MADI Interface also offers native support for Solid State Logic consoles — including remote gain and Independent Gain.  

*SFPs need to be purchased separately.

ROCKNET 300 Console Interfaces

RN.341.MY  
Yamaha Interface Card  
The RN.341.MY card fits into a Yamaha MY-card expansion slot and gives access to 16 input and 16 output channels. A wordclock input and output is available to the host device via the backplane connector and a front panel rotary switch is provided for device identification and selection of up to 15 programmable routing tables. The RN.341.MY makes the respective Yamaha product become a part of the network and enables the remote control of the RN.301.MI microphone pre-amplifiers. Remote control is supported by either a 9-pin connector or via the backplane (for LS9 consoles). The card is compatible with the following Yamaha host devices: DM1000, DM2000, DME24N, DME64N, LS9-16, LS9-32, M7CL, PM5D, PM5D-RH, TX4i, TX5i, TX6i.

RN.343.VI  
Soundcraft Studer Interface Card  
The RN.343.VI card fits into a Soundcraft Studer SCore Live or D21m card expansion slot and gives access to 64 input and 64 output channels. A wordclock input is featured via the backplane connector, while a wordclock output is available at the front panel. A rotary switch is provided for device identification and selection of up to 15 programmable routing tables. The RN.343.VI enables the respective Soundcraft Studer product to become a part of the RockNet digital audio network and enables remote control of any RockNet microphone pre-amplifier. The card is compatible with the following Soundcraft Studer host devices: SCore V1, V2, V4, V6 und Studer Vista 5, Vista 7, Vista 8 and Vista 9.

RN.344.SI  
Soundcraft SI Compact Interface Card  
The RN.344.SI card fits into a Soundcraft SI Compact card expansion slot and gives access to 32 input and 64 output channels (or 64 inputs and 32 outputs). A wordclock input is featured via the backplane connector, while a wordclock output is available at the front panel. A rotary switch is provided for device identification and selection of up to 15 programmable routing tables. The RN.344.SI enables the respective Soundcraft product to become a part of the RockNet digital audio network and enables remote control of any RockNet microphone pre-amplifier. The card is compatible with the following Soundcraft host devices: Compact SI 16, Compact SI 24 & Compact SI 32.

Solid State Logic Integration  
RockNet offers native support of SSL mixing consoles via the RockNet RN.334.MD MADI card — including remote gain and Independent Gain.
**ROCKNET Network Modules**

**RN.362.IR In-Line Repeater**

The RN.362.IR In-Line Repeater extends the length of the CAT5 based infrastructure between two RockNet devices to a maximum of 450 m* (1,500 ft). The Inline Repeater can be remotely powered by any 19" RockNet 300 device. The inputs and outputs provide two LED indicators each for remote power and link status. The use of two RN.362.IRs can extend this distance to a maximum of 450 m* (1,500 ft) between two RockNet devices.

* Distance may vary depending on cable type

**RN.351.FI & RN.352.FO Fiber-optical Converter**

The 350 Series Fiber Interfaces are designed for applications where extended distance between network devices is required. They are equipped with universal transceivers for single- or multi-mode fiber to meet respective infrastructure requirements. The modules cover a range of up to 2 km (1.2 miles) on multi-mode fiber and up to 20 km (12 miles) on single-mode fiber. The RN.351.FI and RN.352.FO consist of the standard RockNet CAT5 Network Interface inputs and outputs on the front panel, while the rear of the products is designed with locking duplex fiber connectors and a locking IEC power connector. The converters feature modular rugged enclosures.

**Features:**
- Long-haul connectivity up to 20 km (12 miles)
- Fiber-optic media conversion
- Status indicators
- CAT5 redundant network interface

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**ROCKNET Applications**

**RockNet 300 Application: Live Recording Event with two Stages**

[Diagram of RockNet 300 Application with various modules and connections]
### General Network Specifications

**ROCKNET – Digital Audio Network**

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<tr>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
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<td>RN.331.DD / RN.332.DO / RN.335.DI Digital Interfaces</td>
<td></td>
</tr>
<tr>
<td>Overview</td>
<td>Digital Audio Interfaces</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>25 W</td>
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<tr>
<td>Input Impedance</td>
<td>+ / - 100 MΩ</td>
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<tr>
<td>Output Impedance</td>
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<td>Signal Delay</td>
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<td>Sample Rate</td>
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<td>Number of Channels</td>
<td>64 Inputs, 64 Outputs</td>
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<td>Frame Format</td>
<td>AES3, SASE (96000 channel)</td>
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<tr>
<td>Input Format</td>
<td>AES10 (MADI)</td>
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<td>Optical Outputs</td>
<td>Waveform / Fiber Type</td>
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<td>Min. Input Level</td>
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<td>Optical Inputs</td>
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<td>Frame Rate</td>
<td>48 kHz, 96 kHz</td>
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<tr>
<td>Output Level</td>
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<tr>
<td>Number of Channels</td>
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<td>Buffer Control Interface</td>
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<td>USB Port</td>
<td>USB 1.1 / 2.0 compatible</td>
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<tr>
<td>Operating Temperature</td>
<td>0 - 50° C</td>
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<tr>
<td><strong>RN.301.MI Microphone / Line Input Interface</strong></td>
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</tr>
<tr>
<td>Gain Range</td>
<td>-6 - 60 dB</td>
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<tr>
<td>Gain Slope</td>
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<td>Sensitivity</td>
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<td>Min. Input Level</td>
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<td>Max. Input Level</td>
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<tr>
<td>Input Impedance</td>
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<td>Phantom Power</td>
<td>50 V per channel</td>
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<td>Mute</td>
<td>selectable per channel</td>
</tr>
<tr>
<td>Equivalent Input Noise (INN)</td>
<td>-127 dBu</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>119 dB (Gain = -6)</td>
</tr>
<tr>
<td><strong>RN.302.LO Line Output Interface</strong></td>
<td></td>
</tr>
<tr>
<td>Max. Output Level</td>
<td>+24 dB, -12 dB, -60 dB, -120 dB, -120 dB, -240 dB</td>
</tr>
<tr>
<td>Output Range</td>
<td>-6 - 24 dB</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>110 Ω</td>
</tr>
<tr>
<td>Impedance Tolerance</td>
<td>1/4 %</td>
</tr>
<tr>
<td>Mute</td>
<td>selectable per channel</td>
</tr>
<tr>
<td>Noise</td>
<td>94 dB</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>119 dB (Gain = -6)</td>
</tr>
<tr>
<td>CrossTalk</td>
<td>-120 dB, -240 dB, -460 dB</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td>0.1 kHz, 20 kHz, 90 kHz</td>
</tr>
<tr>
<td><strong>Common Mode Rejection</strong></td>
<td>100 kHz, 10 kHz, 50 kHz</td>
</tr>
<tr>
<td><strong>CrossTalk</strong></td>
<td>125 dB, -125 dB, -250 dB</td>
</tr>
<tr>
<td><strong>Total Harmonic Distortion</strong></td>
<td>0.006%</td>
</tr>
<tr>
<td><strong>Delay</strong></td>
<td>420 μs</td>
</tr>
<tr>
<td><strong>Output Level</strong></td>
<td>&gt;5 Vpp</td>
</tr>
<tr>
<td><strong>Output Impedance</strong></td>
<td>110 Ω</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td>0.1 kHz, 20 kHz, 90 kHz</td>
</tr>
<tr>
<td><strong>Common Mode Rejection</strong></td>
<td>100 kHz, 10 kHz, 50 kHz</td>
</tr>
<tr>
<td><strong>CrossTalk</strong></td>
<td>125 dB, -125 dB, -250 dB</td>
</tr>
<tr>
<td><strong>Total Harmonic Distortion</strong></td>
<td>0.006%</td>
</tr>
<tr>
<td><strong>Delay</strong></td>
<td>420 μs</td>
</tr>
</tbody>
</table>

### RockNet MADI Interface

**RN.334.MD RockNet MADI Interface**

- **Input Format**: AES10 (MADI)
- **Input Impedance**: 75 Ω
- **Min. Input Level**: 200 mV
- **Optical Inputs**: Waveform / Fiber Type
  - 1.300nm MM/GI
- **Frame Format**: 56 Ch, 64 Ch
  - 96kHz
  - 48kHz
- **Interface Priority**: Selectable (electrical/optical)
- **Sample Rate**: 48kHz, 96kHz
- **Output Level**: >5 Vpp
- **Output Impedance**: 110 Ω
- **Frame Format**: 56 Ch, 64 Ch
  - 96kHz
  - 48kHz
- **Sample Rate**: 48kHz, 96kHz
- **Resolution**: 24 Bit
- **Signal Delay**: 125 μs

*Note: SFPs need to be purchased separately.*
RILINK – IP MEDIA WAN
The Solution to Globally Connect Venues and Studios

RILink is our IP-based solution for transferring broadcast signals such as audio and video feeds with a maximum of flexibility providing a channel for each individual media signal as well as for voice and other data communication in parallel. RILink has some key advantages compared to satellite links since traffic can be sent bidirectionally during the entire event period rather than only during dedicated time slots in case of a satellite connection. In addition, the Riedel RILink solution based on our own network infrastructure provides a much more cost efficient service with business class quality and reliability. The result is an integrated, all-round service package that can be customized to your specific requirements.

Features:

Bi-directional:
RILink connections are always bi-directional, allowing clients to send and receive feeds, access digital archives, or achieve full-duplex communication all in parallel, resulting in a high level of flexibility.

Multi-VPN:
For complex network architectures, several logically separated VPNs can be implemented. This enables a flexible segregation of signals, services or user groups on one physical connection. Thus, any number of bi-directional Audio/Video channels can be handled based on different VLANs.

Latency:
RILink’s latency is provided with high quality data connectivity with short data run time as known from fixed networks. This signal propagation time is significantly shorter than any satellite link and signals exhibit significantly less jitter. Within Europe, for instance, signal runtime on the Riedel Network is in the order of 20 milliseconds, whereas a satellite link exceeds 300 milliseconds by far.

Flat-rate billing:
In contrast to satellite links, RILink is charged at a flat rate for the duration of the event or term. This allows for more precise budgeting and further live, pre-, or post-event processing will never incur extra costs.

High quality:
RILink provides guaranteed, dedicated bandwidth which is available during the entire event period. However, by implementing priorities for certain services, the available bandwidth can be optimized. Since the connectivity on the MPLS network is any-to-any, IP packets are always taking the most direct path to their target destination, ensuring efficient use of the available bandwidth.

Versatile:
RILink generates synergies between various communications services including broadcast signals, audio/video feeds, voice communication (Internet/WoIP), data transfer (CRM/SAP) and Internet access.

Reliable:
The Riedel Networks MPLS Backbone is based on a highly redundant network architecture to ensure a high level of availability. For local access to sites or events, RILink can accommodate different levels of redundancy. The assured availability on Riedel’s MPLS core network is 99.999%. For local customer locations, the availability varies between 99 and 99.6% depending on the physical infrastructure and any selected backup options.

Performance Monitoring & proactive trouble shooting:
Riedel operates a Performance Monitoring tool that allows clients to access and monitor relevant indicators like availability, capacity utilization, jitter and signal run time. Each connection can be monitored via Web Browser or Smartphone App for iOS and Android. In case of any issue, the Riedel Networks 24/7 NOC is contacted automatically, proactively initiated without customer input to ensure the fastest possible solutions.

RILINK – DIRECT INTERNET ACCESS
The Business Class Internet Access for your Event

RILink Direct Internet Access is a business class connection to the public Internet with guaranteed bandwidth and Quality. The service is available in several flavors, as a transparent service, with a managed router, via the Riedel MPLS network and protected including a Firewall blocking all untrusted data streams. The Direct Internet Access service delivers a reliable Internet connection that can be customized to your specific requirements.

Features:

Direct Internet Access - only:
Internet Access without active Network Monitoring and Troubleshooting via DSL, fibre, Ethernet or LTE.

Direct Internet Access - plus:
in addition a managed router provided by Riedel Networks with active Network Monitoring.

Features:

Direct Internet Access - transparent:
Internet Access via the Riedel MPLS network directly to one of the Internet peering points, fully managed and monitored by the Riedel NOC team.

Direct Internet Access - protected:
In addition to the Rilink – Direct Internet Access transparent service, all data traffic, in coming and outgoing, is routed via a Firewall to block all fraudulent and blacklisted traffic streams.
How does RiLink work?

Riedel's global network service is based on a dedicated, global MPLS backbone, owned and operated by Riedel Networks GmbH & Co. KG. The network has a meshed structure and provides the foundation for global Multi Protocol Label Switching (MPLS)-based connectivity, providing maximum reliability and minimum latency. Unlike solutions realized using the Internet, the Riedel global network service provides a secure and fully transparent end-to-end solution with dedicated connections and guaranteed bandwidth, quality and availability.

QoS mechanisms throughout the entire backbone meet maximum requirements with regards to transmission quality (latency, bit error rate, jitter), reliability (guaranteed bandwidth, redundancy), security, availability and delivery time.

Riedel's Global Fiber Network

Moving event locations

- ESC 2019 Tel Aviv, provision of several redundant Internet links, telephone services and DDoS attack prevention.
- Nations' Village @ Olympic Winter Games Pyeong Chang 2018, delivery of a high bandwidth and performant Internet Access.
- Live Nation @ Wireless Festival Germany 2019, high bandwidth and performant Internet Access for complementing services e.g. Intercom, VoIP, WLAN and CCTV.
- VideoART @ 5-Continents-Congress Barcelona 2018, live transmission between conference centre and clinic location over a Layer 2 EVPL connection.
- BMC UK @ football match England vs. Lithuania 2017, transport of AV feeds over Layer 2 EVPL connection between Lithuania to England.
- RTL @ F1, transmission of live HD 1080i signal on H.264 from every race track to Cologne broadcast station with embedded audio channels plus data service, including off-peak usage in case of no video signal transmission.
- NOS @ Olympic Winter Games 2014 in Sochi, transmission of 2x live HD 1080i signals on H.264 from Sochi MCR to Hilversum broadcast station with 16x audio channels embedded plus 400M data service for file transfers.
- ESPN @ X-Games Tignes 2013, transmission of three primary live feeds (world feeds, English, non-English and non-sponsor) and two additional camera feeds for the on-site studio show from Tignes (in the Alps) in France to ESPN IBC in Bristol plus data service in parallel.

Long term contracts

- WDR @ Cologne, connecting the WDR foreign offices in Warsaw, Moscow, Brussels, New York, Washington and Paris to the Cologne headquarters for transfer of live and preproduced content.
- RTL @ New York, connecting their US foreign office of RTL group to Cologne broadcast station via Ethernet for live HD 1080i signal transmission and for file transfer during off-peak usage.
- Russia Today @ Berlin, connecting their German foreign office of Russia Today to Moscow broadcast station via MPLS for live HD 1080i signal transmission and for file transfer during off-peak usage.
- RTL (Germany), transmission of live broadcast signals from the race track, provision of archive access & intercom connectivity to main facility in Cologne (Germany).

How to get a quote for your application

Please contact your Riedel sales manager or send the following information to rilink@riedel.net:

- Addresses of the locations
- Starting time and duration of the event
- Quantities & formats of video signals
- Compressed or native signal transport
- Quantities & formats of audio signals
- Quantities & formats of intercom signals
- Desired bandwidth and type of IP services

Customer: House of Switzerland, P&G and others
Project: Nations Village Winter Games 2018 in Pyeongchang
Task: Internet and MPLS for media representatives and broadcasters

Customer: EBU
Project: Eurovision Song Contest Tel Aviv 2019
Task: Provision of redundant internet links, telephone services, VoIP, USOC and cybersecurity

Customer: RTL (Germany)
Project: Formula One Season (since 2011)
Task: Transmission of live broadcast signals from the race track, provision of archive access & intercom connectivity to main facility in Cologne (Germany)
ARTIST Ecosystem
The Advanced Communications Platform

Artist is a decentralized, scalable digital intercom network that provides reliable communications and audio signal distribution for any audio or intercom application.

An Artist system can be anything from a single Artist frame to vast, fiber-based and remotely connected network of interconnected nodes. Each modular node contains client cards that accept and distribute different types of signals including SMPTE 2110-30/31 (AES67), VoIP, DANTE, AVB, MDI, AES3 and analogue audio. At the present time, Artist is the only intercom platform that talks all audio standards – and its modular architecture allows for the easy accommodation of future standards.

Artist easily scales to fit any application from small theatres to OB vans to multi-national broadcast centers and global events. The non-blocking Artist system can be expanded from 8x8 to 1024x1024 ports and, via inter-node trunking, can connect several thousand subscribers within a single ecosystem. Scaling an Artist system is as easy as adding new client cards to an existing node or adding additional nodes (Artist-32, Artist-64, Artist-128, Artist-1024). This flexibility and modularity make Artist solutions futureproof and enable the system to scale to the demands of any project.

Artist infrastructures natively allow for a high degree of decentralization and the flexible placement of nodes, considerably reducing the wiring and setup costs for any installation. The decentralized network structure also enhances the system’s reliability as its dual ring fiber optic network topology provides full redundancy. On top of that, all internal modules within the Artist frames are hot-swappable, the frames themselves have dual power supplies, and the system configuration is stored within each node.

But a comms platform is not just about the nodes. The user experience of any intercom system is defined by its control panels – and Artist is the only intercom system to employ the SmartPanel concept of app-driven user interfaces. Riedel’s SmartPanels provide multiple connectivity options, allow for software-definable workflows, and combine a vast range of features into a single user interface. Plus, only Artist seamlessly integrates with the award-winning Bolero wireless intercom system to provide flexible and reliable wireless communications to complement the wired intercom panels.

**ARTIST – Key Benefits**

- Decentralized, masterless architecture with a fiber ring reduces wiring and installation costs.
- Fastest configuration software (Director)
- Seamless integration of Bolero wireless intercom and SmartPanel user interfaces
- Compatible with the latest market requirements on IP (ST2110 and NMS) and JT-NM tested
- Decentralized, masterless architecture with a fiber ring reduces wiring and installation costs
- Fastest configuration software (Director)
- Seamless integration of Bolero wireless intercom and SmartPanel user interfaces
- Compatible with the latest market requirements on IP (ST2110 and NMS) and JT-NM tested
- Any comms solution is only as good as its configuration software – and the Director software is just one more differentiator that sets Artist apart from the rest. Powerful and user-friendly, Director offers industry-leading configuration upload times and an intuitive interface with drag-and-drop simplicity that gets people talking right out of the box. With Director, Artist is the only intercom that can load a full configuration in less than 3 seconds – even in large systems with hundreds of users.

Artist has seen countless additions to its feature set, on both the hardware and software side, as it has continued to evolve in response to industry developments. And now, its modular structure has facilitated a swift reaction to the paradigm shift from baseband to IP-based media infrastructures, making Artist the first fully SMPTE 2110-30/31 compliant intercom system available on the market.

**ARTIST Care**

- The Artist Care program guarantees service continuity and access to the Riedel IP knowledge base
- Hotline
- On-site support and consultancy
- Accelerated repair
- Repair loaner
- Software updates

**ARTIST – System Overview**

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- Software updates
ARTIST-1024
The Next Piece of the Puzzle

Artist-1024 is the most evolutionary step in the continuous development of the Artist intercom ecosystem. This new node complements the Artist family, expanding its capabilities with a focus on IP-based installations and higher port densities. With Artist-1024, full compatibility is guaranteed. The node can be effortlessly added into any Artist fiber ring and, just like its siblings Artist-32, Artist-64, and Artist-128, is easily and intuitively configured within the Director software environment.

As its name suggests, the Artist-1024 node boards 1024 non-blocking ports in just a 2RU frame size. This unparalleled port density significantly reduces rack space requirements and creates powerful efficiencies in any application where space is a critical factor. This latest addition to the Artist ecosystem introduces a range of technical innovations centered around a software-definable Universal Interface Card (UIC). This entirely new type of interface card combines networking, mixing, and management and can be configured to act as a SMPTE 2110-30/31 (AES67) or MADI subscriber card, or as an Artist fiber/router/processor card. Changing the connectivity type is as easy as reconfiguring the UIC with the click of a button in Director, Artist’s powerful configuration software. With Director, this reconfiguration is completed within seconds!

The frame design is rounded off by an e-ink display that provides configuration and licensing information, even when powered off. Artist-1024 also offers flexible mounting options: The frame can be mounted with an offset of 0, 25, 50 or 75mm and can be rotated in the rack. If required, the ventilation can be reversed to provide efficient cooling in any situation.

Artist-1024’s UIC concept and its versatile licensing scheme give you unprecedented flexibility, scalability, and capability. With the ability to move ports between subscriber cards and flexibly assign connectivity types as needed, you can easily customize individual nodes, and the entire system, to fit the needs of your specific application. With Artist-1024 you get more than just full IP standards compliance and massive port densities. What you get is the full power of the sophisticated Artist intercom ecosystem, a versatile and future-proof solution that continues to evolve with industry developments and standards. With Riedel, you have a partner on your IP journey who is committed to pushing the boundaries of innovation and is passionate about shaping the future of production communications.

The software-definable Universal Interface Card (UIC) with flexible licensing

One client card, many connectivity types:
The software-definable Universal Interface Card (UIC) with flexible licensing

Licensing Scheme

Artist-1024 introduces a new customer-friendly, flexible licensing scheme with frame-level licensing instead of connectivity-type licensing. Each node starts with a Virtual Artist Matrix (VAM) license which includes a defined number of ports (16 to 1024) that can be freely distributed across the node’s subscriber cards. Additional ports can be licensed with Virtual Artist Expansion (VAE) licenses. Besides these node-locked licenses, there are also Flexible Virtual Artist Expansion (FVAE) licenses that allow for fast (re-) configuration of the system by simply moving capacities between nodes. Since the licensing model does not involve connectivity, systems can be freely altered to meet any connectivity requirement.

VAE = Virtual Artist Expansion License
• A cost-beneficial bundle of ports (16, 32, 64, 128, 256, 512, 1024)
• Node-locked to a 1024-node
• One VAE per node

FVAE = Flexible Virtual Artist Expansion License
• Adds ports to a VAM in 16 port blocks
• Can be moved between 1024 node
• Multiple FVAEs per node

VAM = Virtual Artist Matrix License
• A cost-beneficial bundle of ports (16, 32, 64, 128, 256, 512, 1024)
• Node-locked to a 1024 node
• One VAM per node

• Artist fiber/router/processor card
• Recconfigurable with the click of a button in Director

ARTIST-1024 – Key Benefits

> 2RU frame with up to 1024 ports
> High-density Universal Interface Cards (UIC) with up to 128 ports per card
> Software-defined UICs can switch between SMPTE 2110-30/31 (AES67), MADI or router/processor/Artist fiber
> New 2022-7 and N+1 redundancy schemes
> Multiple independent sync domains per node
> Advanced frame design with reversible front-to-rear cooling

What’s a UIC?

» Combines networking, mixing, and management
» Configurable as a
  » SMPTE 2110-30/31 (AES67)
  » MADI subscriber card
  » Artist fiber/router/processor card
» Recconfigurable with the click of a button in Director

Node A
Wuppertal
VAM-256
VAM-128+VAE-16+FVAE-16
VAM-64+FVAE-16
VAE-16

Node B
New York
VAM-32
VAM-16+VAE-16+FVAE-16

Node C
Tokyo
VAM-16+VAE-16+FVAE-16
VAM-8
VAM-4
ARTIST at a Glance

Universal Interface Card (UIC)
• Software-defined hardware that can be used as a router/processor, Artist fiber, MADI or SMPTE 2110-30/31 (AES67) device
• Scalable from 8 to 128 ports

Intercom System

<table>
<thead>
<tr>
<th>Product name</th>
<th>Artist Intercom</th>
<th>Artist-64</th>
<th>Artist-128</th>
<th>Artist-1024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-blocking subscriber ports per ring</td>
<td>1024</td>
<td>8-64</td>
<td>8-128</td>
<td>10-1024</td>
</tr>
<tr>
<td>Artist nodes per ring</td>
<td>50+</td>
<td>16</td>
<td>16</td>
<td>50+</td>
</tr>
<tr>
<td>Trunked Artist rings</td>
<td>25+</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Subscriber ports in trunked systems</td>
<td>6000+</td>
<td>5120</td>
<td>5120</td>
<td>5120</td>
</tr>
<tr>
<td>Redundant fiber switchover</td>
<td>Fully automatic &amp; seamless</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intercom Nodes

<table>
<thead>
<tr>
<th>Product name</th>
<th>Artist-32</th>
<th>Artist-64</th>
<th>Artist-128</th>
<th>Artist-1024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscriber ports per node (min - max)</td>
<td>8-32</td>
<td>8-64</td>
<td>8-128</td>
<td>16-1024</td>
</tr>
<tr>
<td>Subscriber ports per card (min - max)</td>
<td>8-32</td>
<td>8-64</td>
<td>8-128</td>
<td>8-128</td>
</tr>
<tr>
<td>CPU / NIC card bays</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Client / subscriber card bays</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sync card / module bays</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mounting options</td>
<td>19&quot; Rack Ears</td>
<td>19&quot; Rack Ears</td>
<td>19&quot; Rack Ears</td>
<td>19&quot; Rack Ears</td>
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<tr>
<td>Weight</td>
<td>6.8kg</td>
<td>5.15kg</td>
<td>5.6kg</td>
<td>5.15kg</td>
</tr>
<tr>
<td>Depth</td>
<td>404mm</td>
<td>370mm</td>
<td>370mm</td>
<td>370mm</td>
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<tr>
<td>Height</td>
<td>2RU / 88mm</td>
<td>2RU / 88mm</td>
<td>3RU / 130mm</td>
<td>3RU / 130mm</td>
</tr>
<tr>
<td>Airflow direction</td>
<td>Front-to-rear (reversible)</td>
<td>Front-to-rear (reversible)</td>
<td>Side-to-side</td>
<td>Side-to-side</td>
</tr>
<tr>
<td>Redundant PSUs</td>
<td>   </td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot swappable PSUs</td>
<td>   </td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load-sharing PSUs</td>
<td>- - - </td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input voltage</td>
<td>85-264 VAC, 50/60 Hz</td>
<td>90-264 VAC, 50/60 Hz</td>
<td>90-264 VAC, 50/60 Hz</td>
<td>90-264 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>max. 225W</td>
<td>max. 200W</td>
<td>max. 250W</td>
<td>max. 400W</td>
</tr>
</tbody>
</table>

Interface / Subscriber Cards

<table>
<thead>
<tr>
<th>Artist fiber</th>
<th>CPU-128</th>
<th>CPU-128</th>
<th>CPU-128</th>
<th>CPU-128</th>
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</thead>
<tbody>
<tr>
<td>Dante</td>
<td>Dante-108</td>
<td>Dante-108</td>
<td>Dante-108</td>
<td>Dante-108</td>
</tr>
<tr>
<td>Redundancy</td>
<td>CPU / NIC</td>
<td>CPU / NIC</td>
<td>CPU / NIC</td>
<td>CPU / NIC</td>
</tr>
<tr>
<td>Interface / Subscriber Cards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

32 / 64 / 128 / 1024
• Decentralized architecture with a fiber ring allowing rapid merging
• Seamless integration of Bolero
• SmartPanel user interface
• Supports current IP standards and architecture will support future standards
• Artist Care coverage program
• Fastest configuration software
• Richest feature set (key functions, logics, options, etc.)
• Powerful configuration tools (MCR, RICS, SNMP, Trunking)

32 / 64 / 128
• Unparalleled connectivity:
  • SMPTE 2110-30/31 (AES67)
  • VoIP
  • MADI
  • Dante
  • AVB
  • AES3
  • Analogue
  • GPIO

2 RU frame with up to 1024 ports
Flexible licensing scheme
Multiple independent sync domains per node
New 2022-7 and N+1 redundancy schemes
E-ink display
Reversible front-to-rear cooling

2 RU frame with up to 1024 ports
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Reversible front-to-rear cooling
**DIRECTOR**

**Intuitive Configuration Software**

Director provides the facilities, look and feel of most Windows software products, so that the basic navigation, location and operation of the standard features are familiar. It's quick to learn and extremely convenient to use. Configurations are easily edited by drag-and-drop. Programmable logic functions provide the possibility to handle even complex production requirements with ease, while freely definable markers allow a customized control of the system. With the Audio Patch function, all internal routing and DSP aspects of any control panel of an Artist system can be configured and saved remotely reducing a considerable amount of time in set-up and service of the system.

A high degree of monitoring and diagnostic features are implemented allowing maintenance personnel to quickly solve a problem or to assist a user – even in complex IP installations. This is achieved by the real-time Crosspoint View function in conjunction with the full remote control of each aspect of the system. Control panels and matrix activities can be logged for later inspection. Multiple PCs can control and monitor the system using the Ethernet connection on the network interface controllers. All PCs show the online configuration status simultaneously, and each can access and change the configuration according to its user rights. Since the configurations are stored within each networking Artist frame, the system's reliability won't be affected by the failure of a configuration PC.

**Add-on Features**

The modularity of the Artist platform is also implemented with the Director configuration software. The powerful Director configuration tool can be further enhanced by modular software add-ons like RRCS, Trunk Navigator, Partial Files, Audio Video Router or the Master Control Room.

### Partial Files

The Partial Files add-on saves not only entire configurations but can also save just a portion of a configuration. These “partial files” can be reloaded so that system setups for different types of productions can be easily stored and recalled.

### Audio/Video Router Interface

With this optional software package, the system continuously monitors up to two external routing switchers and provides conference-based tracking of your Artist intercom system.

### Master Control Room

With Master Control Room, the individual configuration intercom systems or 4-wire conference systems found in many broadcast installations can be easily replaced and integrated into the main intercom system. An integrated scheduler allows for pre-programming the start of regular conferences, e.g. the daily editorial conference at 9:00 am.

### Trunk Navigator

Riedel's Trunk Navigator Software enables you to comfortably network geographically separate Artist intercom systems by dynamically allocating audio trunk lines between their locations. This way, several thousand subscribers can be connected within a single ecosystem. Trunk lines can be established with ATM, ISDN, VoIP, digital leased lines or analog land lines. The redundancy design enables the software to run on two computers simultaneously and switch seamlessly from one computer to the other in the case of a failure.

### Events/Scheduler

The Events/Scheduler add-on is a versatile tool to automatically trigger pre-defined events (including MCR conferences) or configuration changes.

### Master Control Room

With Master Control Room, the individual configuration intercom systems or 4-wire conference systems found in many broadcast installations can be easily replaced and integrated into the main intercom system. An integrated scheduler allows for pre-programming the start of regular conferences, e.g. the daily editorial conference at 9:00 am.

### Trunk Navigator

Riedel's Trunk Navigator Software enables you to comfortably network geographically separate Artist intercom systems by dynamically allocating audio trunk lines between their locations. This way, several thousand subscribers can be connected within a single ecosystem. Trunk lines can be established with ATM, ISDN, VoIP, digital leased lines or analog land lines. The redundancy design enables the software to run on two computers simultaneously and switch seamlessly from one computer to the other in the case of a failure.

### ACTOR – RTS®/Telex® Trunking Interface

The Riedel Actor is a revolutionary solution that allows intelligent trunking between Riedel Digital Matrix Intercom systems and existing RTS®/Telex® intercom installations (using Trunkmaster version 8.71). It provides seamless communications between both systems. This includes all point-to-point connections with port alpha transfer and tally as well as IFBs, group calls and conferences (partylines). Actor helps to secure previous intercom investments and enables customers to proceed in future intercom installations with an Riedel Digital Matrix Intercom solution.

**RTS® & Telex® are registered trademarks of Bosch Security Systems Inc.**
The Tango TNG-200 is Riedel’s first fully-networked platform based on the AES67 and AVB standards. With its own dedicated intercom application, it can be turned into a cutting-edge and flexible solution for a variety of communications scenarios.

Riedel’s Tango is an efficient standalone solution and a perfect example of German Engineering. Shaped perfectly to your needs, Tango is the flexible platform for today’s and future standards in the broadcast, theater and event environment.

Tango TNG-200 offers powerful processing capabilities, 2 integrated Riedel Digital Partylines, 2 AES67 and AVB compatible ports, 2 Ethernet ports, 1 option slot, and redundant power supplies. Tango TNG-200 is 1.5 RU high and features a low mounting depth and a low noise design. All current and legacy Riedel intercom panels, including the new SmartPanels, are fully compatible with Tango.

The sunlight readable, high-resolution, full color TFT display ensures perfect readability at all times, extending the range of possible applications and providing maximum ease of use. The intuitive front panel controls enable users to easily recall presets and adjust audio levels.

The unit’s intuitive front-panel controls simplify the recall of presets and adjustment of audio levels while its powerful hardware allows the system to grow through future applications. With Tango, Riedel extends its intercom product line with a comms platform that is suited for small to mid-size installations at an excellent price/performance ratio.

TANGO – Features

» Redundant network ports and power supplies
» 2 AES67 and AVB compatible ports
» 2 Ethernet control ports
» 2 Integrated Digital Partyline ports
» Low mounting depth, 1.5 RU
» 8 analog 4-Wire ports
» 10 GPIOs
» Wordclock in/out

TANGO – Key Benefits

» Flexible platform
» Fully network-based supporting the AES67 and AVB standards
» Low noise operation
» Intuitive control via front panel
» Sunlight readable, high-resolution TFT color display
» Expandable via option slot

PULSE

Intuitive Configuration Software

Riedel’s Pulse is the configuration software for the Tango TNG-200 platform. It enables access, setup and control of any aspect and function of the Tango TNG-200 platform and its installed applications, combining intuitive handling features such as drag and drop with 3D views for easy programming.
RIEDEL Intercom Panels – The Easy-to-operate Key Panels

No matter which Riedel intercom panel you choose: You can be sure to get easy-to-operate, high-tech control panels with broadcast-quality audio, minimum dimensions, and outstanding design made through quality German manufacturing.

RIEDEL Intercom Panels – Features

- High-resolution, high-contrast displays designed for optimal readability in different work environments
- Ergonomic key design suited for any workflow
- Individual listen level controls to adjust the level of each talk key
- Digital matrix connectivity via AES3, AVB or AES67
- SmartPanel concept - turning an intercom panel into a true multi-purpose device
- 3x GPI In / 3x GPI Out
- 2x Analog In / 2x Analog Out
- 2x headset connections
- Ultra-compact design with integrated power supply

1000 Series Panels

The 1000 Series is the classic set of key panels from Riedel and is available in 19" rack-mount and desktop versions. All control key panels feature bright, dimmable 8-digit alphanumeric in-key LED displays, individual rotary encoders for listen level control and LED level indication for each talk key. In addition, all 1000 Series control key panels provide five dedicated function keys, a built-in loudspeaker, XLR headset connector and a removable gooseneck microphone. Three GPI Inputs and three GPI Outputs are available for system-wide programming as standard.

1100 Series Panels

The 1100 Series is Riedel’s high-tier control key panels for Riedel digital matrix intercoms. Following Riedel's intuitive concept of integrated displays in the panel keys, the 1100 Series features high-res color OLEDs. With 65,000 colors and a resolution of 140 dpi, these new displays provide excellent readability and are able to show highly detailed characters and icons of up to 24x24 pixels. The panel provides individual rotary encoders to adjust the listen level of each talk key.

1200 Series SmartPanels

Building upon the technology that powers Riedel’s SmartPanel App-driven user interfaces, the new 1200 Series represents a quantum leap forward in workflow flexibility, power, and connectivity. Featuring multiple true-color multi-touch displays, 32 innovative hybrid-lever keys, and the ability to easily adapt to the various workflows in use today, this new panel is poised to allow you to work the way you always have while opening up entirely new possibilities. Completely new from the ground up, the new 1200 Series SmartPanel RSP-1232HL (Hybrid Lever) is Riedel’s smartest SmartPanel yet.

2300 Series SmartPanels

With the 2300 Series, RIEDEL introduced the world’s first SmartPanel. Its unique feature set includes high-resolution, multi-touch color displays, premium-quality stereo audio, as well as a multilingual character set. The 2300 Series is an “open platform” for applications that are natively fully compliant with SMPTE 2110-30 (AES67) and is also AVB and AES3 compatible. The 2300 Series panels are essentially two devices in one. In addition to the intercom app, the MediorNet Control App allows to route and control audio and video signals within MediorNet media networks.

Riedel Virtual Panels

The Riedel Virtual Panels allow a regular computer or a mobile device to function as an intercom control panel in combination with any Riedel digital matrix intercom system. The communication between the matrix and the virtual panel is handled via the VoIP-108 G2 client card.

Riedel SmartPanels

Riedel's SmartPanel concept decouples a panel’s capabilities from its hardware and turns it into a generic device on which you may install apps for different purposes. Therefore, you do not only buy what the panel is capable of today – but benefit also from what the panel will be capable of in the future.
<table>
<thead>
<tr>
<th>Features</th>
<th>1000 Series Panel</th>
<th>1100 Series Panel</th>
<th>1200 Series SmartPanel</th>
<th>2300 Series SmartPanel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays</td>
<td>LED (in key)</td>
<td>High-resolution multi-color LED (in key)</td>
<td>High-resolution sunlight readable true color TFT (touchscreen)</td>
<td>High-resolution sunlight readable high color TFT (touchscreen)</td>
</tr>
<tr>
<td>Key Type</td>
<td>Pushbutton (with integrated display)</td>
<td>Pushbutton (with integrated display)</td>
<td>Infrared laser (with integrated rotary encoder)</td>
<td>Pushbutton (with touch gesture)</td>
</tr>
<tr>
<td>Individual Volume Control</td>
<td>Rotary for each key</td>
<td>Rotary for each key</td>
<td>Rotary for each key</td>
<td>Rotary for each key</td>
</tr>
<tr>
<td>Subtone Adjustment</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SWR Page (indicating the number of keys)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Maximum Characters</td>
<td>8</td>
<td>8</td>
<td>16 (touch)</td>
<td>8</td>
</tr>
<tr>
<td>Enc Support</td>
<td></td>
<td></td>
<td>Touch enabled Info Display, Beep, Monitor, Normalization Gain, Easy Replay via simple touch gestures</td>
<td>Touch enabled Info Display, Beep, Monitor, Normalization Gain, Easy Replay via simple touch gestures</td>
</tr>
<tr>
<td>Function Keys</td>
<td>Headset/panel mix, Shift page, Normalization, Options, Swap</td>
<td>Headset/panel mix, Shift page, Normalization, Options, Swap</td>
<td>Headset/panel mix, Shift page, Normalization, Options, Swap</td>
<td>Headset/panel mix, Shift page, Normalization, Options, Swap</td>
</tr>
<tr>
<td>Analog In/Out</td>
<td>2/2 (6-pin female D-sub)</td>
<td>2/2 (6-pin female D-sub)</td>
<td>2/2 (6-pin female D-sub)</td>
<td>2/2 (6-pin female D-sub)</td>
</tr>
<tr>
<td>GPI In/Out</td>
<td>3/3 (9-pin female D-sub)</td>
<td>3/3 (9-pin female D-sub)</td>
<td>3/3 (9-pin female D-sub)</td>
<td>3/3 (9-pin female D-sub)</td>
</tr>
<tr>
<td>Headset Connections</td>
<td>2 XLR4, 9-pin female D-sub</td>
<td>2 XLR4, 9-pin female D-sub</td>
<td>2 XLR4, 9-pin female D-sub</td>
<td>2 XLR4, 9-pin female D-sub</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Matrix: BNC, RJ45</td>
<td>Matrix: BNC, RJ45</td>
<td>Matrix: BNC, RJ45</td>
<td>Matrix: BNC, RJ45</td>
</tr>
<tr>
<td>Loudspeaker</td>
<td>1 (full-range)</td>
<td>1 (full-range)</td>
<td>1 (full-range)</td>
<td>1 (full-range)</td>
</tr>
<tr>
<td>Supported Character Sets</td>
<td>Latin, Cyrillic, Katakana</td>
<td>Latin, Cyrillic, Katakana</td>
<td>Latin, Cyrillic, Katakana</td>
<td>Latin, Cyrillic, Katakana</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Types</th>
<th>1000 Series Panel</th>
<th>1100 Series Panel</th>
<th>1200 Series SmartPanel</th>
<th>2300 Series SmartPanel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack-Mount</td>
<td>RCP-1012E/O (12 keys, 1RU 19&quot;, depth: 56 mm / 2.2&quot;)</td>
<td>RCP-1112 (12 keys, 1RU 19&quot;, depth: 60 mm / 3.2&quot;)</td>
<td>RSP-1123XL (12 keys, 1RU 19&quot;, depth: 75 mm / 3.1&quot;)</td>
<td>RSP-2132 (16 keys, 1RU 19&quot;, depth: 80 mm / 2.5&quot;)</td>
</tr>
<tr>
<td>Expansion</td>
<td>DCP-1111</td>
<td>DCP-1123</td>
<td>RSP-2132</td>
<td>RSP-2324</td>
</tr>
<tr>
<td>Desktop</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-2112 (16 keys)</td>
</tr>
<tr>
<td>Commentary</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-1116 (16 keys)</td>
<td>DCP-1116 (16 keys)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SmartPanel Features</th>
<th>1000 Series Panel</th>
<th>1100 Series Panel</th>
<th>1200 Series SmartPanel</th>
<th>2300 Series SmartPanel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touchscreen (small mouth support)</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Intercom App</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Headset Control App</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Control Panel App</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Audio Monitoring App</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Logical Group Colors</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Key Banks</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NFC</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Light Sensor</td>
<td>-</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Intercom Goes Commentary:
Riedel Commentary Control Panel

The Riedel CCP-1116 is a commentary unit for two commentators with integrated intercom functionality. The device provides up to two commentary positions with high-quality mic pre-amps and all the intercom features known from Riedel Digital Matrix Intercom systems.

Combined in one compact device and cabled via one single CAT5 or COAX cable, the CCP-1116 reduces cabling effort, set-up time and points of failure. In addition, the CCP-1116 provides a clearly arranged user interface with improved functionality at the commentary position including programmable buttons for communications and GPIOs as well as remote control of the commentary panel.

In case of failure within the system – e.g. loss of the cable connection in between a CCP-1116 and the matrix – the standalone/emergency mode will be established without a loss of signal. ON AIR and MIC DIRECT OUT audio signals are available separately and A/B combined at XLR outputs of the CCP-1116. AUX IN XLR inputs feed the Phones Monitor Mix and thus replace the monitor signals.

Intercom Controls:
16 free programmable intercom control keys with individual listen volume controls. For two-user operation the set of keys can be split, resulting in 8 intercom keys per commentator. Following Riedel’s intuitive concept of integrated displays in the panel keys, the 1100 series features the next generation of high-res colour OLEDs. With 65,000 colours and a resolution of 140 dpi, these new displays provide excellent readability and are able to show up to eight highly detailed characters of up to 24x24 pixels – ideal for displaying icons or Asian characters. Definable marker colours for the keys complete the labelling options and provide instant function identification and signalization, e.g. for incoming calls. Function keys for fast operation: headset/panel mic, shift/page, F1, F2, options.

**Riedel Commentary Panel – Features**

- High-quality microphone preamp with 48V supply, transformer balanced input, low-cut, +6dBu Limiter and level meter
- All line inputs electronically balanced, all line outputs transformer balanced
- Large illuminated push-button switches for ON AIR and COUGH/MIC MUTE
- 16 free programmable intercom keys with 8 character high-resolution OLED displays
- Additional programmable and remote controllable mono line input (e.g. to feed local playback sources) and speaker output
- High-quality headphone amplifier with monitor mix section: 3 source level controls, sidetone and overall level
- Elaborate split-ear operation for commentary headphones: all sources routable
- Standalone/emergency mode operation
- Power supply redundancy via DC connector
- Quick and easy set-up
2300 Series SmartPanel

RSP-2318

With the RSP-2318, Riedel introduced the world’s first SmartPanel. The RSP-2318 SmartPanel is a compact, 1RU intercom panel featuring three high-resolution, sunlight-readable, multi-touch color displays. The RSP-2318 is an "open platform" for applications that is natively fully compliant with SMPTE-2110-30 (AES67) and is also AVB and AES3 compatible.

The RSP-2318 essentially is two devices in one. In addition to the Intercom app, the MediorNet Control App allows to route and control audio and video signals within MediorNet media networks.

DSP-2312

Being one of the smallest desktop panels on the market, the DSP-2312 brings all the SmartPanel benefits in a small form factor perfectly suited for narrow production environments. Its compact design features integrated tripod mounting options as well as ergonomically optimized key positions.

What’s a SmartPanel?

It is an open app-based user interface, with integrated multi-touch technology designed to bring your workflow to a whole new level.

Riedel RSP-2318 – Key Features

» Open expandable platform for applications
» 18 keys
» 3x high-resolution, sunlight-readable displays
» Intercom and control panel in one device
» Individual volume control
» Intuitive touch-screen UI
» Integrated power supply

Riedel DSP-2312 – Key Features

» Open expandable platform for applications
» 12 keys
» 2x high-resolution, sunlight-readable displays
» Ergonomic design for use in narrow production areas
» 1/4-20 threads for use with tripods or magic arms for any installation environment
» Intercom and control panel in one device
» Individual volume control

Tech Specs

<table>
<thead>
<tr>
<th>Environmental Temperature</th>
<th>0 °C … +45 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>100 … 240 VAC, 50 / 60 Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>15 W (typ.) / ≤ 30 W (max.)</td>
</tr>
<tr>
<td>Term Factor</td>
<td>Desktop Panel</td>
</tr>
<tr>
<td>Dimensions (w×h×d)</td>
<td>262 mm × 84 mm × 179 mm / 10.3&quot; × 3.3&quot; × 7.1&quot;</td>
</tr>
<tr>
<td>Weight</td>
<td>1.81 kg / 4.0 lbs</td>
</tr>
</tbody>
</table>
RSP-2318

Tech Specs

Environmental Temperature 0 °C ... +45 °C
Supply Voltage 100 ... 240 VAC, 50 / 60 Hz (redundant)
Power Consumption ≤ 30 W
Form Factor 19", 1 RU
Dimensions (w×h×d) 446 mm × 44 mm × 79 mm / 17.6" x 3.1" x 1.7"
Weight 1.7 kg / 3.8 lbs

ESP-2324

Tech Specs

Environmental Temperature 0 °C ... +45 °C
Supply Voltage 100 ... 240 VAC, 50 / 60 Hz (redundant)
Power Consumption ≤ 5 W
Form Factor 19", 1 RU
Dimensions (w×h×d) 446 mm × 44 mm × 79 mm / 17.6" x 3.1" x 1.7"
Weight 1.4 kg / 3.1 lbs
Building upon the technology that powers Riedel’s SmartPanel App-driven user interfaces, the new 1200 Series, RSP-1232HL, multifunctional user interface represents a quantum leap forward in workflow flexibility, power, and connectivity. Featuring multiple full-color multitouchscreen displays, 32 innovative hybrid Lever Keys, the ability to leverage apps for multifunctionality, and the ability to easily adapt to the various workflows in use today, this new panel is poised to allow you to work the way you always have while opening up entirely new workflow possibilities.

**Intercom App**

The RSP-1232HL’s Intercom App supports multiple workflows. Some comms users prefer a “Talk/Listen” workflow where the user chooses what to listen to from an initially silent panel. Other users prefer a “Talk/Make” workflow that starts with a panel that broadcasts everything, with the users selecting which signals to turn off. Users can decide which mode they prefer on a per-panel basis.

New features that further enhance the panel’s ease of use include Riedel’s new Logical Groups concept. Logical Groups allow users to choose custom colors for the key labels or the LED rings around the keys. Each key label has an 8-character main label, a 16-character sub-label, and user-defined icons. Other icons provide information about the state of each key at any point in time. The “open mic”, “muted key”, “incoming beep”, or “port busy” prompts are easy to read and understandable at a glance. Users can get as much or as little information about any given key as needed.

Connectivity is king at Riedel. The new panel takes advantage of the AES3 digital connectivity that Riedel has always used along with SMPTE 2110-30 (AES67) connectivity. AES67 connection is provided via fiber SFPs or RJ45 connections, creating a variety of daisy-chaining and redundancy options to realize extraordinary cabling flexibility and resilience. Other features include stereo, phase-coherent speakers, front-panel mic mute and sidetone adjustments, front/rear USB ports, Bluetooth and NFC connectivity, GPIO and 4-wire ports, and a light sensor for the autocalibration of screen brightness in changing ambient light environments.

**Control Panel App**

With the new Control Panel App, third-party control, monitoring, and automation systems can be adapted to the RSP-1232HL’s easy-to-use and highly intuitive user interface. Its feature set is surprisingly simple but incredibly powerful. Users can trigger actions in third-party systems with the panel’s keys, rotaries, and touchscreens, and get visual feedback on configuration status and changes via colors, labels, and symbols on touchscreens and LEDs.

The Control Panel App is built on open NMOS standards for easy interoperability and scalability. Key to this is the NMOS IS-07 standard which allows the exchange of event/state information (e.g., the press of a button or the color of an LED) across systems of different vendors.

**Audio Monitoring App**

With the Audio Monitoring App, users can easily keep track of their audio quality while managing a production via the Intercom App. The app directly connects to any SMPTE-2110-30 (AES67) stream available within the network, which makes selecting and managing monitoring sources incredibly flexible and surprisingly simple. Users may monitor up to 16 mono AES67 channels in parallel from a total of 128 channels which they can swiftly manage within the app’s intuitive browser-based configuration tool. As all SmartPanel apps run simultaneously, users will never miss an important call; Intercom calls will automatically dim the monitoring volume and users will never miss an important call: apps run simultaneously, users will never miss an important call: users can trigger actions in third-party systems with the panel’s keys, rotaries, and touchscreens, and get visual feedback on configuration status and changes via colors, labels, and symbols on touchscreens and LEDs.

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Unique new key design: The Hybrid Lever Key

Combines lever and rotary into one single key. Control countless parameters with one key.

Comfortably rest your fingers on the rotary, always ready to talk.

LED ring allows for easy grouping of keys based on color.

Full color, high-resolution, sunlight readable touch screen

Reactive multi-touch display

Best-in-class readability for labeling/signaling.

Info Display & Key Banks

- No mixing of “operating mode” and “menu mode”
- Stay fully operational (i.e. you do not lose access to your intercom keys) when accessing additional settings or menus
- Find additional information and navigation for your current working context (e.g. key banks)

Logical Groups

Quickly identify the teams/team members you need to talk to.
- Flexibly choose between 16 individual group colors and assign them to either the key label or the LED color ring
- Create a simple way to show relationships between keys.

Control Panel App

API based on open NMOS standards:
- Discover via IS-04, connect via IS-05, transport via IS-07

Audio Monitoring App

Monitor up to 16 mono AES67 channels from a total of 128

Create labels that speak to you with 8 characters in the main title and 16 in the subtitle.

Quickly switch back to intercom via key banks.

Hardware front elements

- Display
  - 3 high-resolution, bright-color, sunlight readable TFT displays with multi-touch control (capacitive)
- Keys & rotaries
  - 32 software-assignable lever keys
  - 2x rotary encoders
- Mic
  - 1x threaded 6.3 mm jack for microphone
  - 1x panel microphone
- Headset
  - User-exchangeable headset connector with pre-terminated 4-PIN male XLR connector
- Speaker
  - 2x full range, high-quality speakers
- USB
  - USB 2.0 Connector (Standard Type A)
  - max. 500 mA
- IEC
  - Available
- Bluetooth
  - Available
- Light Sensor
  - Available

Hardware rear elements

- Power Connectors
  - Power input
- USB
  - USB 2.0 connector (standard type C)
  - max. 1000 mA
- MicroSD-Card Slot
  - Support of MicroSD-Cards and MicroSDHC-Cards up to 32GB size
- Ethernet
  - 2x RJ-45 (8P8C) 10/100/1000BASE-T (AES67/Network)
- Management
  - 2x connectors for matrix connection (RJ45, BNC)
- DisplayPort
  - DisplayPort connector
- GPI-Out
  - 3x Output
  - Min. 48 V / 300 mA protected by self-healing fuse
- GPI-In
  - 3x Inputs
  - Uin = +5 V . . . +48 V
- Audio
  - 2x RJ-45 (8P8C) 4-Wire in- and outputs
- Headset
  - 2x RJ-45 (8P8C) Headset connectors

Hardware Overall

- Environmental Temperature
  - 0 °C . . . +45 °C
- Humidity
  - 20 % . . . 90 % rel. hum., (non-condensing)
- Altitude
  - 3000 m abs. alt.
- Supply Voltage
  - 90 . . . 240 VAC, 47 . . . 63 Hz
- Power Consumption
  - <20W
- Form Factor
  - 19”, 2 RU
- Dimensions (w×h×d)
  - 445 mm × 88 mm × 95 mm / 19” x 3.7” x 3.5” (installing Dimensions)
- Weight
  - 3.4 kg / 7.4 lbs

Software Features

- Intercom Keys
  - 32
- Individual Volume Control
  - ✔
- Multi-touch Displays
  -✔
- AES67
  - ✔
- AES70
  - ✔
- GPI (In/Out)
  - 3/3
- Audio VI A
  - ✔
- Audio VI B
  - ✔
- Headset A
  - ✔
- Headset B
  - ✔
- Expansion Panels
  - ✔
- Key Banks
  - ✔
- Panel MUX, Panel Speaker
  - ✔
- Logical Groups
  - ✔
Smartpanel Apps

Intercom App

2300 Series SmartPanels come with a choice of three intercom apps, each with a range of connectivity options to meet specific user requirements and keep costs low. You only pay for those features you actually need. The 1200 Series Intercom App already includes all features of the 2300 series while adding unique features like Logical Group colors and Key Banks as well as rich connectivity options.

MediorNet Control App

2300 Series SmartPanels are essentially two devices in one. In addition to the Intercom app, the MediorNet Control App allows you to route and control audio and video signals within MediorNet media networks.

Control Panel App

With the Control Panel App, the RSP-1232HL becomes a control panel which can both send and receive information from any 3rd party control, monitoring, and automation system supporting NMOS.

Audio Monitoring App

The Audio Monitoring App enables users to monitor up to 16 AES67 channels (from a total variety of 128) in parallel while continuing to do Intercom.

Intercom Goes Real-Time Network

Riedel talks standards. In offering both AES67 and AVB compatibility, Riedel’s new Tango Platform provides maximum flexibility in today’s and tomorrow’s production and delivery environments.

About SMPT-E-2110

SMPT-E ST 2110 is a new standards suite that specifies the carriage, synchronization, and description of separate elementary essence streams over professional internet protocol (IP) networks in real-time for the purposes of live production, playout, and other professional media applications.

About AES67

The Audio Engineering Society published a standard for audio over IP in September 2013. The standard combines IP-based transport mechanisms like RTP and SIP with timing mechanisms to achieve interoperability and reliable high quality audio transport over Local Area Networks. All Riedel AVB products are prepared to optionally use AES67 as transport protocol.

About AVB

Riedel’s AVB product line provides a communication solution fulfilling the demands of professional intercom users, allowing for transmission of Audio/Video in real-time with guaranteed bandwidth and reliability via Ethernet-based Local Area Networks (LAN) for highest broadcast quality and AV experience.

There are four major applications for AVB in intercom:

- matrix-to-control panel connections via LAN
- audio distribution via LAN
- matrix-to-matrix connections via LAN (Trunking)
- distribution of digital partylines via LAN (via C22)

AVB Manager

The Riedel AVB manager is a manufacturer-independent software solution that provides generic AVB control for all IEEE 1722.1-compliant AVB devices. Providing a global overview of AVB infrastructures, this solution automatically detects and enumerates available AVB devices, supporting straightforward basic configuration and connection management via an intuitive graphical user interface. *

* The Riedel AVB Manager is available for free download at avb.riedel.net
Network Stream Adapters

**NSA-001D**

Leverage existing IP infrastructures for your 1000 and 1100 Series intercom panels with this small and convenient interface. Riedel’s NSA-001D Network Stream Adapter handles all bi-directional signal conversion between AES3 and AES67. The NSA-001 is a plug-and-play device that has multiple mounting options and connects between an AES67-capable switch and a legacy Riedel intercom panel of the 1000 and 1100 Series.

Power is provided externally or via PoE and convenient LEDs indicate system status. Extend the service-life of your panels and simplify cabling in your Artist system!

**NSA-002A**

Riedel’s NSA-002A Network Stream Adapter handles all bi-directional signal conversion between analog signals and AES67. The NSA-002A is a plug-and-play device that has multiple mounting options and connects between a Bolero wireless intercom system and any analog 4-wire.

Power is provided internally or via PoE and convenient LEDs indicate system status.

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**Connect AVBx8 Panel Interface**

The Connect AVBx8 converts eight AES signals to AVB and vice versa. Built in a compact 9.5”/1RU housing (Smart Rack SR12) the device provides eight CAT5 ports to connect up to eight Artist control panels in one or two-channel mode to the matrix via Ethernet-based LANs.*

**Connect AVBc8 AES Interface**

The Connect AVBc8 converts eight AES signals to AVB and vice versa. Built in a compact 9.5”/1RU housing (Smart Rack SR12) the device provides eight BNC ports to connect up to eight Artist control panels in one or two-channel mode to the matrix via Ethernet-based LANs. The AVBc8 interface supports bi-directional AES for intercom panels and unidirectional transport for broadcast AES.*

**Connect AVBa8 Analog Interface**

The Connect AVBa8 converts eight analog signals to AVB and vice versa. Built in a compact 9.5”/1RU housing (Smart Rack SR12) the device provides Analog 4-wire intercom ports (+18dBu in/out) on individual RJ-45/D-Sub25 for connection to equipment such as studio loudspeakers, cameras, telephone hybrids etc via Ethernet-based LANs.*

* The Riedel AVB Manager is available for free download at avb.riedel.net

**Connect AVB – Key Benefits**

- Risk-free utilization of existing AVB compliant facility and enterprise LAN data infrastructure for intercom applications
- Real-time communications over Ethernet in broadcast quality (AES3/EBU)
- Latency <250μs in 1000BaseT structures
- Based on official IEEE next generation Ethernet standards (Ethernet AVB)
- Guaranteed Quality of Service (QoS)
- Allows synchronized operation
- Future-proof Infrastructure

---

**NSA-001D**

Leverage existing IP infrastructures for your 1000 and 1100 Series intercom panels with this small and convenient interface. Riedel’s NSA-001D Network Stream Adapter handles all bi-directional signal conversion between AES3 and AES67. The NSA-001 is a plug-and-play device that has multiple mounting options and connects between an AES67-capable switch and a legacy Riedel intercom panel of the 1000 and 1100 Series.

Power is provided externally or via PoE and convenient LEDs indicate system status. Extend the service-life of your panels and simplify cabling in your Artist system!

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---

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- Future-proof Infrastructure
BOLERO
DIGITAL
WIRELESS
INTERCOM
BOLERO – Riedel’s state-of-the-art wireless intercom system

As an all-new wireless intercom system capable of supporting up to 250 beltpacks and 100 antennas in a single deployment, Bolero is a true game-changer. Bolero redefines the wireless intercom category with features such as its ADR (Advanced DECT Receiver) with multi-diversity and anti-reflection technology for greater RF robustness, “Touch&Go” NFC beltpack registration, and versatile operation as a wireless beltpack, a wireless keypad, or — in an industry first — a walkie-talkie.

With the addition of the newest Bolero Standalone 2110 (AES67) mode, there are now three network modes available for Bolero systems — each of them dedicated to specific applications.

Bolero Integrated leverages the powerful Artist ecosystem, including SmartPanels and extensive I/O connectivity, and runs over a standards-based SMPTE 2110-30 (AES67) IP network. Decentralized Bolero antennas connect to AES67-capable switches and to Artist frames equipped with AES67 client cards, providing a fully integrated point-to-point seamless handover intercom ecosystem. With each decentralized antenna and beltpack added, coverage and network robustness are increased. Up to 250 belt packs per Bolero Net are now supported.

Bolero Standalone Link provides plug & play simplicity that is ideal for smaller installations, portable deployments, or cases where IP networks are not required. Up to 100 antennas and 100 belt packs can be quickly and easily set up and configured via a web browser, without the need for an Artist Intercom matrix or Audio control. The antennas may be positioned in a redundant ring or as a daisy chain topology, or deployed individually using CAT5 cabling. When a Smartphone is connected, the belt pack can act like a car’s “hands free” setup so the user can receive calls on their phone and talk and listen via their belt pack headset. Users can also inject phone calls directly into the intercom channels, allowing either a Bluetooth headset or a Smartphone to be connected. When a Smartphone is connected, the belt pack can also inject phone calls directly into the intercom channels, providing flexible workflow.

Based on Riedel’s extensive rental experience, the belt pack uses a combination of premium materials, including high-impact plastics and rubber overmolds, making it both tough and comfortable to use in any situation.

The Bolero high-clarity voice codec provides both higher speech intelligibility and more efficient use of RF spectrum supporting twice the number of belt packs per antenna for the same radio bandwidth as other DECT-based systems. The Bolero-exclusive ADR technology combines a unique receiver design with multiple diversity elements specifically designed to reduce sensitivity to multipath reflections, making Bolero usable in challenging RF environments where other systems have great difficulty.

Bolero lets users establish ADR systems in Stand-alone mode, in a “daisy chain” topology, or in a detached mode, or deployed individually using CAT5 cabling. As in Standalone, antennas are distributed over a SMPTE 2110-30 (AES67) IP network and connected via AES67-capable switches. As in Standalone Link deployments, audio mixing and control functions are handled by the antennas and 100 belt packs can be accommodated per Bolero Net and configured via a web browser. An optional NSA-002A provides analogue interfacing and GPIOs and fiber-connected switches or switch cascades can be used to cover long distances.

The bolero high-clarity voice codec provides both higher speech intelligibility and more efficient use of RF spectrum supporting twice the number of belt packs per antenna for the same radio bandwidth as other DECT-based systems. The bolero-exclusive ADR technology combines a unique receiver design with multiple diversity elements specifically designed to reduce sensitivity to multipath reflections, making bolero usable in challenging RF environments where other systems have great difficulty.

The belt pack itself features six intercom channels and a separate “Reply” button for a quick reply to the last caller. Bolero’s sunlight-readable and dimmable display can be rotated so that it is readable in any orientation. Also, in an industry first, the belt pack can be used without a headset like a walkie-talkie radio utilizing an integrated mic and speaker. Bolero belt packs support Bluetooth, allowing either a Bluetooth headset or a Smartphone to be connected. When a Smartphone is connected, the belt pack can act like a car’s “hands free” setup so the user can receive calls on their phone and talk and listen via their belt pack headset. Users can also inject phone calls directly into the intercom channels, providing new levels of workflow flexibility.

Bolero’s sunlight-readable display with Gorilla Glass™ “Reply” button for a quick reply to the last caller. Bolero’s sunlight-readable and dimmable display can be rotated so that it is readable in any orientation. Also, in an industry first, the belt pack can be used without a headset like a walkie-talkie radio utilizing an integrated mic and speaker. Bolero belt packs support Bluetooth, allowing either a Bluetooth headset or a Smartphone to be connected. When a Smartphone is connected, the belt pack can act like a car’s “hands free” setup so the user can receive calls on their phone and talk and listen via their belt pack headset. Users can also inject phone calls directly into the intercom channels, providing new levels of workflow flexibility.

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## Beltpack

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make path delay spread protection</td>
<td>Yes, ADR (Advanced DECT Receiver)</td>
</tr>
<tr>
<td>Audio bandwidth</td>
<td>200 Hz to 7 KHz (-3dB)</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Full-duplex on all routes</td>
</tr>
<tr>
<td>Eavesdropping</td>
<td>AES encryption, 256-bit</td>
</tr>
<tr>
<td>Line in</td>
<td>3.5mm jack, -20dbm, 20Hz to 20kHz</td>
</tr>
<tr>
<td>Talk controls</td>
<td>4 pushbuttons + reply key + 2 walkie-talkie keys (momentary, latching &amp; auto mode)</td>
</tr>
<tr>
<td>Volume / level controls</td>
<td>2x master or slave + menu navigation</td>
</tr>
<tr>
<td>Display</td>
<td>High-contrast sunlight-readable full colour LCD display</td>
</tr>
<tr>
<td>Audio prompts</td>
<td>Out of range, Bluetooth connected / disconnected, beltpack registered / deregistered, beltpack unregistered / not registered, beltpack not connected, battery low</td>
</tr>
<tr>
<td>No. of full-duplex audio paths</td>
<td>6 with individual level control</td>
</tr>
<tr>
<td>Handset operation</td>
<td>Volume table mode</td>
</tr>
<tr>
<td>Vibrate module</td>
<td>Programmable vibration indicates incoming calls and other notifications</td>
</tr>
<tr>
<td>Removable health monitoring</td>
<td>Battery charge status, via web browser</td>
</tr>
<tr>
<td>Battery</td>
<td>Lithium ion removable battery pack with user removable clip</td>
</tr>
<tr>
<td>USB charging</td>
<td>USB Type C connector for beltpack charging</td>
</tr>
<tr>
<td>Operation time</td>
<td>17 hours typical</td>
</tr>
<tr>
<td>Headset connector</td>
<td>4-pin male XLR, user replaceable</td>
</tr>
<tr>
<td>Microphone type</td>
<td>Electret (i.e., 5V bias voltage) or dynamic, user selectable or automatic</td>
</tr>
<tr>
<td>Side-tone and microphone gain</td>
<td>Individually adjustable for each beltpack &amp; via remote control</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>v4.1 (hands free profile &amp; HSP headset profile) &amp; A2DP advanced audio distribution profile</td>
</tr>
<tr>
<td>Beltpack to antenna range</td>
<td>Indoor (structure dependent): ~100-200m; outdoor (free line of sight): ~150-250m</td>
</tr>
<tr>
<td>Beltpack registration</td>
<td>1 touch NFC, over-the-air, beltpack to antenna and beltpack to beltpack (local NFC) registration</td>
</tr>
<tr>
<td>Network connection</td>
<td>SMPTE 2110-30 AES67 IP or direct cable connection in standalone mode</td>
</tr>
<tr>
<td>Display type</td>
<td>High contrast 6-inch display</td>
</tr>
<tr>
<td>Programmable transmission power</td>
<td>Yes</td>
</tr>
<tr>
<td>Support of layer 3 networks</td>
<td>Yes</td>
</tr>
<tr>
<td>TTL Settings</td>
<td>Adjustable multi-tone (1 to 255 / default 16)</td>
</tr>
<tr>
<td>DEC Master Primary</td>
<td>Configurable in Riedel</td>
</tr>
<tr>
<td>Network monitoring on antenna display</td>
<td>IP (email links / alerting)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Fail-Safe (RS-232, type 2, class 4, 15-30W) or 10 to 57 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>17W</td>
</tr>
<tr>
<td>Mounting points</td>
<td>Mic stand threaded socket 5/8” &amp; 3/8”, spigot adapter with wing screw lock, Kensington lock hole, &amp; screw hole for a safety wire mounting</td>
</tr>
<tr>
<td>Environmental</td>
<td>IP-65 environmental sealing; protected against dust ingress and water spray from all angles (with XLR connector plugged in)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20 to 65°C (long term); -20 to 80°C (short term)</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-10 to 55°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0-90%, non-condensing Ta=40°C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>210mm (W) x 66mm (D) x 190mm (H); 8.3” (W) x 2.6” (D) x 7.5” (H)</td>
</tr>
<tr>
<td>Weight</td>
<td>1380g</td>
</tr>
</tbody>
</table>

## Battery Charger

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of beltpack slots</td>
<td>5</td>
</tr>
<tr>
<td>Beltpack charge time</td>
<td>Up to 3 hours</td>
</tr>
<tr>
<td>Charge status LEDs</td>
<td>1 per charge slot</td>
</tr>
<tr>
<td>Beltpack display</td>
<td>% charged, charging time remaining, temperature, battery health</td>
</tr>
<tr>
<td>USB Type A / C</td>
<td>For firmware update and charging a Phone or beltpack via cable</td>
</tr>
<tr>
<td>Power socket</td>
<td>IEC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>17W</td>
</tr>
<tr>
<td>Mounting</td>
<td>Screw mounts or 19” rack drawer via optional accessory kit</td>
</tr>
</tbody>
</table>

## Antenna

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of beltpacks per antenna</td>
<td>10</td>
</tr>
<tr>
<td>Radio frequency range</td>
<td>1.880 - 1.930GHz (region dependent)</td>
</tr>
<tr>
<td>Antenna radio coverage (diameter)</td>
<td>Indoor (structure dependent): ~200-400m; outdoor (free line of sight): ~300-600m</td>
</tr>
<tr>
<td>Beltpack to antenna range</td>
<td>Indoor (structure dependent): ~200-400m; outdoor (free line of sight): ~300-600m</td>
</tr>
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<td>Beltpack registration</td>
<td>1 touch NFC, over-the-air, beltpack to antenna and beltpack to beltpack (local NFC) registration</td>
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<tr>
<td>Display type</td>
<td>High contrast 6-inch display</td>
</tr>
<tr>
<td>Programmable transmission power</td>
<td>Yes</td>
</tr>
<tr>
<td>Support of layer 3 networks</td>
<td>Yes</td>
</tr>
<tr>
<td>TTL Settings</td>
<td>Adjustable multi-tone (1 to 255 / default 16)</td>
</tr>
<tr>
<td>DEC Master Primary</td>
<td>Configurable in Riedel</td>
</tr>
<tr>
<td>Network monitoring on antenna display</td>
<td>IP (email links / alerting)</td>
</tr>
<tr>
<td>Power supply</td>
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<tr>
<td>Mounting points</td>
<td>Mic stand threaded socket 5/8” &amp; 3/8”, spigot adapter with wing screw lock, Kensington lock hole, &amp; screw hole for a safety wire mounting</td>
</tr>
<tr>
<td>Environmental</td>
<td>IP-53 environmental sealing; protected against limited dust ingress and water falling as a spray at an angle of up to 60° from terminal</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-10 to 40°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>9-95%, non-condensing Ta=40°C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>210mm (W) x 66mm (D) x 190mm (H); 8.3” (W) x 2.6” (D) x 7.5” (H)</td>
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</table>
**BOLERO Integrated**

- Seamless comms environments with the full power of Artist, including SmartPanels and extensive I/O connectivity
- Multiple fiber-connected switch cascades for long distances
- Antenna distribution via SMPTE 2110-30 (AES67) IP network
- Extensive connectivity options including SMPTE 2110-30/31 (AES67)
- AES3, MADI, Dante and analogue 4-wires
- Configuration via Director, Artist’s powerful configuration tool
- 500 conferences and unlimited point-to-point connections
- 250 beltpacks, 100 antennas

**BOLERO Standalone Link**

- Daisy chain or redundant ring antenna network
- Plug&Play simplicity
- EPS-1005 PSU powers up to five antennas
- Up to 300m CAT5 cable between antennas
- Analogue 4-wires and GPIOs via optional NSA-002A throwdown box
- Integrated web browser for configuration (Artist not required)
- 12 partylines and unlimited point-to-point connections
- 100 beltpacks, 100 antennas

**BOLERO Standalone 2110 (AES67)**

- Antenna distribution via SMPTE 2110-30 (AES67) IP network
- Multiple fiber-connected switch cascades for long distances
- Analogue 4-wires and GPIOs via optional NSA-002A throwdown box
- Integrated web browser for configuration (Artist not required)
- 12 partylines and unlimited point-to-point connections
- 100 beltpacks, 100 antennas
PERFORMER
DIGITAL
PARTYLINE
INTERCOM
PERFORMER
The Digital Partyline Experience

The Performer Series provides the world’s first digital partyline intercom system, offering 2 and 4-channel master stations, rack-mount, wall-mount and desktop speaker stations as well as call light indicators and 2-channel beltpack headset stations. In addition to pure partyline applications, the C44plus system interface makes the Performer series the first fully integrated “digital” solution for combined digital matrix and partyline intercom. The Performer product line is completed by the Performer 32 digital intercom matrix/stage management system, which is designed for the requirements of stand-alone broadcast applications, opera houses and theatres as well as sports and cultural events.

PERFORMER Partyline – Key Benefits

» High quality digital audio: no noise, no hum
» Fully digital audio, DSP, controls
» Perfect sidetone-nulling
» Remote Mic-XII
» 2-channel intercom operation plus additional program sound on XLR cables
» Real plug-and-play installation

Performer CR-4 / CR-2 Master Station

The Performer master stations CR-4 (4-channel) and CR-2 (2-channel) are the ideal choice for setting up a stand-alone digital partyline system. Depending on the setup, the integrated power supply of the 19”/R1 device can power up to 32 Performer devices per line including beltpacks, split-boxes or desktop speaker stations. Additional power supplies easily expand the possibilities. The clear LED provides users with ultimate performance and flexibility. The colour-illuminated buttons are ideal for applications in real-world environments. The remote mic-kill function allows the user to mute any open microphone on the intercom channels. The CR-4/CR-2 features an additional program input that can be mixed individually to each of the intercom channels. Other features include individual listen volume controls for all partyline, Call and GPI, I/O and a stage announce function to use the intercom microphone to talk over the PA system. The CR-4/CR-2 can be operated using a headset or the integrated powerful loudspeaker with a gooseneck microphone.

Performer C3 digital Beltpack / Headset Station

The Performer C3 is an ergonomically shaped, fully digital 2-channel beltpack that includes all the standard features from conventional analog partyline systems including daisy-chaining. The beltpack uses high-quality digital audio for noise-free and hum-free signals. Extensive DSP signal processing provides perfect sidetone-nulling and excellent intelligibility in applications with very high ambient noise levels. The C3 has three XLR connectors, one for headset, one for signal input and one for signal loop through, which can also be used as an additional analog program input. Operation is extremely convenient. Two large rotary level controls on the top of the C3 adjust the listen volumes for CH-A and CH-B. Pushing on the A or B volume control toggles talk on/off with momentary/latching operation to the respective channel and includes talk LED indication. The C3 is easy to configure and also features a call send button. A bright call light indicates an incoming call to all daisy-chained Performer devices.

Performer CD-2

Desktop Speaker / Headset Station

The CD-2 Desktop Speaker/Headset provides the same feature set as the CR-2 Master Station except for the internal power supply. This makes the CD-2 ideal either for operation as a desktop speaker station or – in combination with an external power supply – as a 2-channel-master station for setting up a stand-alone digital partyline system.

Performer CW-2

Wall Mount Speaker / Headset Station

The CW-2 Wall Mount Speaker/Headset Station comes with a standard 4-gang outlet box and provides an easy-to-use 2-channel digital intercom panel. The large rotary level controls combine volume control and a talk button with momentary/latching operation. The unit can be operated using a headset or the integrated powerful loudspeaker with a microphone. A call signal LED, plus Call and GPI functions complete the feature list. The CW-2 can be powered from the partyline or via a local power supply.

Performer C22

System Interface

The C22 System interface is designed for stand-alone operation, the device features an integrated 24x24 port digital intercom matrix, which can be configured via MediorNet software. Pre-programmed configurations can be loaded via the DIP-switches on the front. Full digital interfacing is provided for Artist and Performer 32 matrix systems. Analog 4-wire I/Os and GPIs are provided for interfacing to 3rd party intercom systems.

Performer C44plus

System Interface

The C44plus System Interface allows for seamless integration of digital partylines in matrix intercom environments. The 19”/R1U unit converts four two-channel CAT5 matrix ports to four phantom powered beltpack lines. The beltpacks are connected to the C44plus via standard 3 pin XLR cables. Up to 16 beltpacks can be daisy chained on each line: one C44plus can power up to 38 beltpacks. For stand-alone operation, the device features an integrated 24x24 port digital intercom matrix, which can be configured via MediorNet software. Pre-programmed configurations can be loaded via the DIP-switches on the front. Full digital interfacing is provided for Artist and Performer 32 matrix systems. Analog 4-wire I/Os and GPIs are provided for interfacing to 3rd party intercom systems.

Performer AAS

Audio Assignment Software

The Performer Audio Assignment Software is an intuitive tool for editing the settings of the eight pre-programmed configurations of the Performer C44plus System Interface. This enables the C44plus to serve as the heart of a small stand-alone intercom solution.
The Performer series is a flexible and powerful system to meet your specific communications needs. The setup of distributed party lines can be easily adjusted to meet any requirement and finally provides digital audio quality on a beltpack.

Whether used in standalone party line applications or integrated with a digital matrix intercom system: The Performer product line is always the ideal choice for demanding customers in broadcast, opera houses and theatres as well as for sports and cultural events.
Network Interfacing

Intelligent and seamless interfacing to the outside world is the key to success in many intercom applications. The Artist platform is an open world of communications. Dedicated interface solutions let you communicate with telephones, digital and analog partylines, camera intercoms, 2-way radios and other analog and digital systems.

Connect Trio

ConnectTrio combines the following in one half-rack/1RU device: two independent analog POTS telephone hybrids; an ISDN BRI/S interface with two independent ISDN B-channels; and two independent VoIP audio codecs. This not only saves rackspace and eliminates the need for additional equipment, but also provides enhanced flexibility to the intercom installation. Connect Trio enables you to dial, make and receive calls to and from any PSTN, VoIP, ISDN or mobile phone as well as G.722 reporter codecs. When used with Artist and Tango intercom systems, you can even remote key panels via ISDN.

Connect IPx8

Connect IPx8 provides high-quality audio-over-IP interfacing for intercom systems (EBU Tech 3347 compatible). The 19"/1RU unit is designed to connect up to eight Artist control panels or audio lines to the Artist VOIP-108 G2 matrix client card via IP based networks. The SIP-based interface converts AES3 or analog signals into compressed IP data and vice versa. Connect IPx8 can be configured to meet your individual bandwidth needs, always providing an unmatched combination of audio quality and low network traffic. The panel interface flawlessly connects any Riedel 1100, 1000, 2300 or 5108 series key panel with full functionality to Artist and Tango matrices via IP-networks.

Connect IPx2

Connect IPx2 is the little brother to the Riedel Connect IPx8 panel interface. The 19"1RU unit is designed to connect up to two Riedel key panels to Artist and Tango matrices via IP based networks.

Connect AVBx8

The Connect AVBx8 converts eight AES signals to AVB and vice versa. Built in a compact 9.5"1RU housing (Smart Rack SR12)the device provides eight CAT5 matrix ports to two phantom powered digital beltpack lines and vice versa, allowing for the seamless integration of digital partylines with matrix intercom systems. In addition, it can also be used for any application that necessitates the routing of digital partyline intercom audio via an AES digital audio infrastructure such as with MediorNet, Artist or any 3rd party AES audio router solution.

Partyline Interfacing

IF-2104 – 2/4-Wire Interface

The 19"1 RU 4-channel 2/4-wire interface IF-2104 converts four partyline channels to transformer balanced audio inputs and outputs (4-wire) on individual XLR connectors. The 2/4-wire hybrid features automatic nulling. The interface detects the S-CALL and can switch built-in relays to activate paging systems, radio equipment or other external devices.

Performer C44plus System Interface

The C44plus System Interface seamlessly integrates digital partylines in matrix intercom environments and can also serve as a stand-alone matrix for small applications. The plus-version features a USB-port on the front to connect a PC to configure the internal 2x24 matrix via the Performer AAS Audio Assignment Software.

Performer C22 System Interface

The Performer C22 system interface converts two two-channel CAT5 matrix ports to two phantom powered digital beltpack lines and vice versa, allowing for the seamless integration of digital partylines with matrix intercom systems. In addition, it can also be used for any application that necessitates the routing of digital partyline intercom audio via an AES digital audio infrastructure such as with MedionNet, Artist or any 3rd party AES audio router solution.
Radio Interfacing

RiFace G2 – Universal Radio Interface
The RiFace G2 is a universal radio interface to connect wired communication systems with walkie-talkie style radio systems. The 19"/2RU interface includes one or two two-way radios (user provided), processor logic to control the radios, DSP presets as well as circuitry to adjust the levels of the various audio sources. Set-up and operation is fast and easy. The RiFace G2 can also operate as a stand-alone radio repeater.

JUGGLER – TETRA Radio Interface
The Riedel JUGGLER solution seamlessly integrates TETRA digital trunked radio networks into the wired intercom matrix, providing intelligent integration between TETRA radio groups and Riedel Artist intercom ports. The system allows calls from any port/group/conference of the Artist system to up to 64 individual TETRA radio groups and vice versa. The interface connects the TETRA Base Station Controller to any given Riedel Artist system via MADI. JUGGLER works with any TETRA-standard compliant subscriber.

GPI Interfacing

RIF-1032 – GPI Interface
The RIF-1032 is an external GPI interface designed for the Artist digital intercom. The device connects via CAT5 cabling to the expansion ports of all Artist 1000, 1100, 2000 and 2100 series control panels, as well as the DIF-1000. Six RIF-1032 GPI interfaces can be cascaded to each matrix port. This versatile interface provides 32 single-fused, potential free change-over contacts as well as potential free inputs.

Panel Accessories

PMX-2004 SFP – Panel Multiplexer
The PMX-Series panel multiplexers are used to remote up to four (PMX-2008: eight) intercom panels from the Artist matrix using a fiber link. Depending on the SFP module (SM/MM) the system allows for the operation of a group of intercom panels over a distance of up to 500 m (1,600 ft) or 2 km (1.2 miles) in a cost-effective way while reducing set-up time to a minimum.

FBI – Fiber Interface Adapter
The FBI bidirectionally converts an Artist panel port from CAT5 to fiber allowing Artist key panels to be operated over long distances. Since the unit offers connectors both for the matrix and for the panel, it can be inserted on either the panel or matrix side of the link. The interface may also be used for the bidirectional transmission of an AES3 signal. Distances up to 2,000 m (6,600 ft) can be covered using duplex multi-mode fiber.

CIA – Coax Interface Adapter
The CIA interface converts an Artist panel port from CAT5 to 75 Ω Coax and vice versa. Since Artist control panels provide both CAT5 and coax interfaces for connection to the matrix, CIA’s can be used to adapt an Artist matrix port to the existing infrastructure, which is especially useful for OB-vans and mobile applications. Distances of up to 300 m (1,800 ft) can be achieved using 0.8/4.9 video cable.

CPX-AVB
The CPX-AVB option card offers an Ethernet interface, that allows reliable real-time connectivity to Riedel digital intercom matrices via AVB for all 1100-Series RCP panels.

SPX-AES
The SPX-AES option card for the SmartPanel offers real-time connectivity via CAT or COAX linking the SmartPanel to the Artist digital intercom matrix using AES3.
JUGGLER – System Overview

CONNECT IPx2 / IPx8 – System Overview

Applications:
- multi-port matrix-to-matrix connections (Trunking)
- matrix-to-control panel connections
- multi-channel distribution of audio lines
- matrix-to-virtual control panel connections

CONNECT TRIO – System Overview

Applications:
- dual analog POTS hybrid
- ISDN PRI interface (2x ISDN B-channel)
- 2x VoIP channels
HEADSETS
Comfortably functional...
Headsets for Intercom & Radio Applications

As an intercom technology specialist, Riedel perfectly understands the specific demands and requirements of customers for intercom headsets. Headsets should be durable, light weight, small, comfortable and easy to clean and to maintain. All Riedel intercom headsets combine optimal audio quality with absolute reliability and are compatible with radios, beltpacks and intercom control panels from other manufacturers.

AIR – Ultra Light Professional Headset
The Riedel AIR series is the ideal ultra lightweight headset for customers who place great demands on quality, design and comfort. The AIR headset allows you to communicate with your immediate environment while simultaneously speaking and listening via your headset. The specially engineered Coolmax® material used for the exchangeable ear cushions provide great breathability and comfort for long hours. The 270º rotation of the microphone boom allows the microphone to be worn on either left or right side, and a noise compensating electret or dynamic microphone guarantees a high quality response.

PRO – Closed Professional Headset
The Riedel PRO series provides reliable, high-quality professional headsets that were designed in conjunction with beyerdynamic® to meet the demanding requirements of digital intercom applications. The headphone features a neodymium magnet system for accurate reproduction and balanced sound. The soft circumaural earcups provide very good noise attenuation and are as comfortable as the fully adjustable padded headband. The headset provides either a hypercardioid dynamic microphone or a high-quality omnidirectional condenser microphone for commentary applications. The 270º rotation of the microphone boom allows the microphone to be worn on either left or right side.

MAX – High Performance Headset
The MAX series headsets have been specially designed for use in areas with high ambient noise levels. The headsets feature excellent attenuation abilities and therefore provides optimal hearing protection for their users. The special noise cancelling electret or dynamic microphone guarantees clear communications in all conditions. This makes Riedel’s MAX headset the ideal choice for sound & light crews or TV camera intercom in sports or concert venues. MAX offers high comfort and low weight. The soft headset cushions are easily detachable for quick exchange and fit perfectly to the ear. The microphone boom rotates 270º and allows the microphone to be worn either on the left-hand or right-hand side.

RUN-E1 L/R – Professional In-Ear Headset
Optimized for use with Riedel’s award-winning Bolero wireless intercom system, the RUN-E1 L/R (ULMP) is an ultra-lightweight one-ear headset for demanding, high-noise environments (like sports, security, or events) where maximum voice intelligibility paired with a secure fit is key. Other features include a fully adjustable mic boom and the ability to be used with custom earmolds for a perfect individual fit.

Coolmax® is a registered trademark of INVISTA

Customized Accessories
In addition to the AIR, PRO, MAX and RUN headset series Riedel offers a wide range of accessories and customized solutions.

Connectors and Cables
All headsets are available with 4-pin XLR female as standard. The standard cable length is 1.5 meters. Customized connectors, cables and special PTI versions are available on request.
Specifications

**AIR Headset**

<table>
<thead>
<tr>
<th>Headphone</th>
<th>AIR (D1/E2)</th>
<th>AIR (E1/E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency response</td>
<td>100 Hz – 30 kHz</td>
<td>100 Hz – 30 kHz</td>
</tr>
<tr>
<td>Impedance (XLR4F version)</td>
<td>250 Ω</td>
<td>250 Ω</td>
</tr>
<tr>
<td>Characteristic SPL</td>
<td>106 dB at 1 mW / 1 kHz</td>
<td>106 dB at 1 mW / 1 kHz</td>
</tr>
</tbody>
</table>

**Microphone**

| Transducer type | Dynamic | Condenser (back-electret) |
| Frequency response | 150 Hz – 12 kHz | 150 Hz – 12 kHz |
| Nominal impedance | 420 Ω | 420 Ω |
| Supply power | – | – |

**Run Headset**

<table>
<thead>
<tr>
<th>Headphone</th>
<th>RUN (D1/E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency response</td>
<td>250 Hz – 5 kHz</td>
</tr>
<tr>
<td>Impedance</td>
<td>780/1450 Ω at 500/1000Hz</td>
</tr>
<tr>
<td>Characteristic SPL</td>
<td>100 dB</td>
</tr>
</tbody>
</table>

**Microphone**

| Transducer type | Electret |
| Frequency response | 150 Hz – 12 kHz |
| Nominal impedance | <2.2 Ω |
| Supply power | 200 µA |

**PRO Headset**

<table>
<thead>
<tr>
<th>Headphone</th>
<th>PRO (D1/E2)</th>
<th>PRO (E1/E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency response</td>
<td>100 Hz – 30 kHz</td>
<td>100 Hz – 30 kHz</td>
</tr>
<tr>
<td>Impedance (XLR4F version)</td>
<td>250 Ω</td>
<td>250 Ω</td>
</tr>
<tr>
<td>Characteristic SPL</td>
<td>100 dB at 1 mW / 1 kHz</td>
<td>100 dB at 1 mW / 1 kHz</td>
</tr>
</tbody>
</table>

**Microphone**

| Transducer type | Dynamic | Condenser (back-electret) |
| Frequency response | 150 Hz – 12 kHz | 150 Hz – 12 kHz |
| Nominal impedance | 420 Ω | 420 Ω |
| Supply power | – | – |

**MAX Headset**

<table>
<thead>
<tr>
<th>Noise Attenuation</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1,000</th>
<th>2,000</th>
<th>4,000</th>
<th>8,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuation EN 24869-1 dB</td>
<td>14</td>
<td>19</td>
<td>26</td>
<td>31</td>
<td>28</td>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Headphone</th>
<th>MAX (D2)</th>
<th>MAX (E2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency response</td>
<td>88 Hz – 10 kHz</td>
<td>88 Hz – 10 kHz</td>
</tr>
<tr>
<td>Impedance (XLR4F version)</td>
<td>256 Ω</td>
<td>256 Ω</td>
</tr>
<tr>
<td>Characteristic SPL</td>
<td>106 dB at 1 mW / 1 kHz</td>
<td>106 dB at 1 mW / 1 kHz</td>
</tr>
</tbody>
</table>

**Microphone**

| Transducer type | Dynamic | Back electret |
| Frequency response | 150 Hz – 10 kHz | 150 Hz – 10 kHz |
| Nominal impedance | 480 Ω | >1600 Ω |
| Supply power | – | – |

**Symbols**

- 1: single headphone / dual headphones
- 2: dynamic microphone / electret microphone
- D: omnidirectional condenser microphone for commentary applications
- E: excellent noise attenuation for high noise environments
- 1: microphone boom rotates 270° allowing for either left or right side microphone
- 2: exchangeable components for easy maintenance

The MAX headset has been designed for the special communications needs in motor sports such as Formula One. In this environment, the crews at the pitwalls need to communicate under high ambient sound pressure levels.
Riedel Services

Consulting

Are you unsure as to what you are looking for or wonder which products will best fit your workflow? No Problem!

Together with our sales managers, a dedicated global team of consultants are available to assist you through the process of system design. Our team is ready to help you devise, develop, fine-tune, and implement strategic, cutting-edge solutions that meet and exceed your workflow requirements.

With consulting, we offer comprehensive scenario and workflow simulations and assistance with the design demonstration and realization of challenging technical integrations.

Our consultants pride themselves in assisting customers from project inception to completion and are available to work with you at any of our offices or on your premises.

Commissioning

It is important to ensure your product and system performance before you go live.

Our team of experienced consultants, engineers and technicians will ensure that your system has up-to-date software and firmware and will help you with basic configurations as planned in the consulting phase.

Commissioning can be done at our facility (Factory Acceptance Test), at your facility (Site Acceptance Test), or as a service without any formal acceptance.

Academy

The more you know about our products, the better you can operate them and the more benefit they will deliver for you. – Knowledge is key!

Riedel Tuesdays

You can start to build knowledge by joining us at a Riedel Tuesday. On the first Tuesday every month we host a day somewhere in the USA, and at other subsidiaries around the world, to provide information about our products in an informal and casual setting. At these events you can meet other people from the industry and learn what’s new from Riedel.

Public Seminars

Join one of our Public Seminars, taking place at least twice a year at our headquarters in Wuppertal, Germany. Open technical seminars are for users who want to build up and expand their knowledge for a particular product range. In small groups of eight people, we offer a mix of product overview, hardwares and software familiarization, and hands-on product usage.

Customized Training

Of course, we also offer training tailored specifically to your needs. These can be held at one of our subsidiaries or at your facility on your system. These sessions will allow your system administrators, service, and maintenance engineers to learn and implement best practices from our experienced trainers.

In case your system is already up and running and you want to refresh your staff on our products or train new staff, we can also provide dedicated equipment for the training.

Contact us via training@riedel.net

Dates and locations are published at

www.riedel.net/Services/Academy
Extended Warranty

Our Extended Warranty program helps you to control your annual operational costs.

Most Riedel products come with a 24-month standard manufacturer warranty from the moment of delivery onward. At any time after the purchase of the product, you can buy an extended warranty for an additional one, two, or three years. This gives you predictable cost-of-ownership for a period of up to 5 years.

The standard and extended warranties cover all repairs related to poor workmanship or defects in material. They do not cover misuse or external factors like overvoltage, liquid damage, or mechanical damage.

**Extended Warranty is not available for**

- Batteries
- B-Stock, Ex-Rental
- Repair workmanship
- Pouches, foams, earpieces, cables

Support

Our team of experts provides support via e-mail, phone, remotely, or in person to help you to get the maximum performance out of your Riedel products and solutions over their operational lifetime. With all current products on hand, our engineers are able to reproduce issues and find solutions quickly.

We are available for first level support by phone and e-mail from Monday to Friday from 8 am to 5 pm local time in the regional office. Additional availability and services are offered through Service Level Agreements.

In case we can’t help you by phone, or you would like to get us on site for support during an update or similar, we can visit you wherever you are located.

Service Level Agreement

We offer different Service Level Agreements (SLAs) so you can pick the one that fits your needs most.

Please get in touch with one of our sales representatives for details.

Why SLA?

- Predictable costs
- Shorter downtimes
- Back up your in-house support team
- Keep your software and firmware up to date

Repairs

As the manufacturer we offer individually calculated hardware repairs at the component level.

This minimizes the cost for repairs and offers an economical way to maintain asset usability.

A bookable Express Repair guarantees quick repairs within 5 days*.

We typically maintain stock spare parts for at least seven years after a product has been discontinued. Spare parts that can be purchased by end-users are listed in our comprehensive spare part price list.

Downloads

After establishing a MyRiedel account, the download section provides access to manuals, application notes, quick guides, and software and firmware (assuming an active Software Update Agreement - SUA).

Questions?

We are happy to answer all of your questions and tailor a service that fits your needs.

Contact your local Riedel office for more information.