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Welcome

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Καλώς ήρθατε

Добро Пожаловать

Bienvenidos

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About Riedel Communications



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

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 "interop" and plugfests.

Optimized Business Processes

All of the company's divisions are consolidated in the Riedel Technology Park, a 55,000m² high-tech business park, owned and operated by Riedel. Sales and support offices around the globe provide local and specialized services to our clients.

Everything from a Single Source

The core of Riedel's product and solutions portfolio consists of integrated real-time networks for video, audio, data, and communications. Riedel's products include the MediorNet fiber-based media network; Artist, Tango, and Bolero intercom solutions; and RockNet digital audio networks.

A wide range of complementary technologies, such as professional radio systems, RF camera links, and specialized solutions for race circuits and race management further expand Riedel's product range. In close collaboration with its system partners, Riedel's capabilities also extend to highly technical and customized solutions. Years of experience in project management and adapting equipment to unique project demands underscore the client-centric approach of the company.

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:9001 processes ensure the highest levels of quality and reliability since our products are often used 24/7 in mission-critical applications.

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.

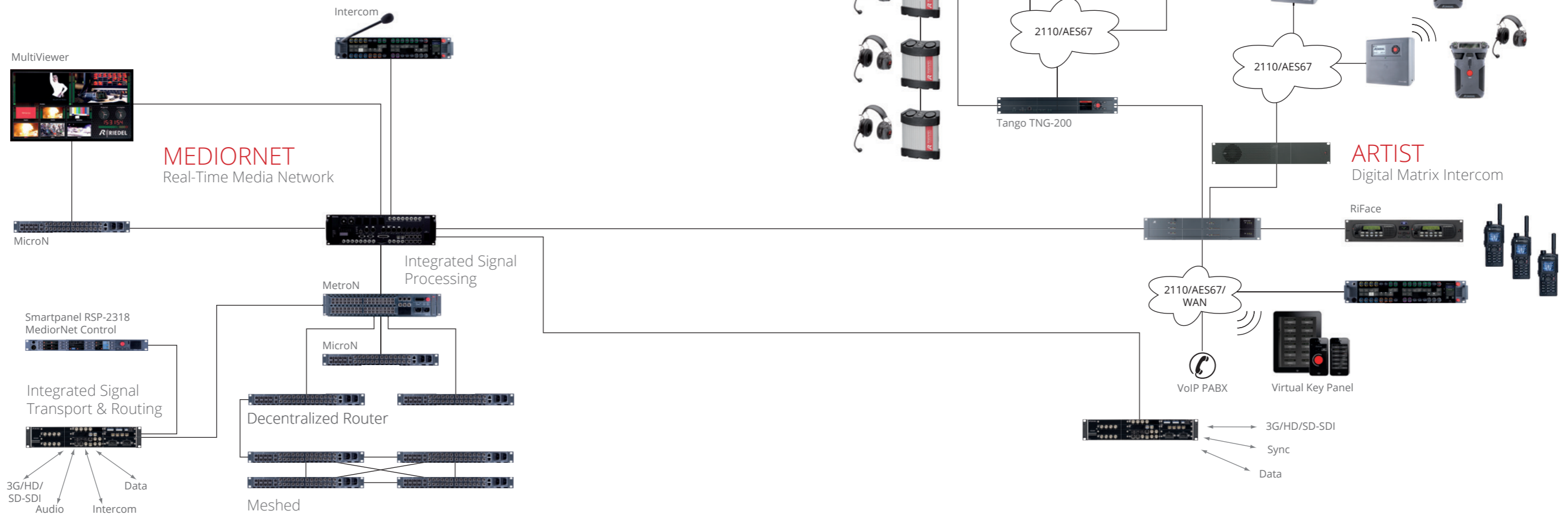
Riedel has always created sustainable value through technological leadership. Hence, all our current solutions are already based on IP architectures. At the same time, we continue to support all the legacy interfaces. With Riedel's "plug and play" feature set, you will be able to continue operating our 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.

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.

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



MEDIORNET
REAL-TIME
MEDIA
NETWORK



MEDIORNET

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

MediorNet unleashes 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 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. 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 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 – Features

- » Fiber signal transport for 3G/HD/SD-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

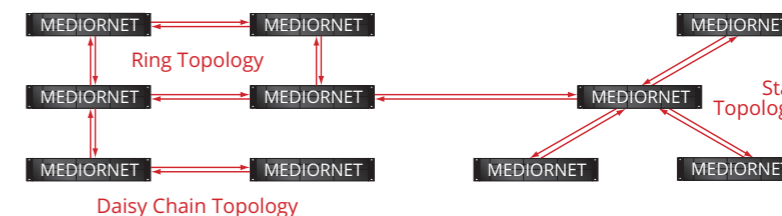
MediorNet – Key Benefits

- » 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 adaptation 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.

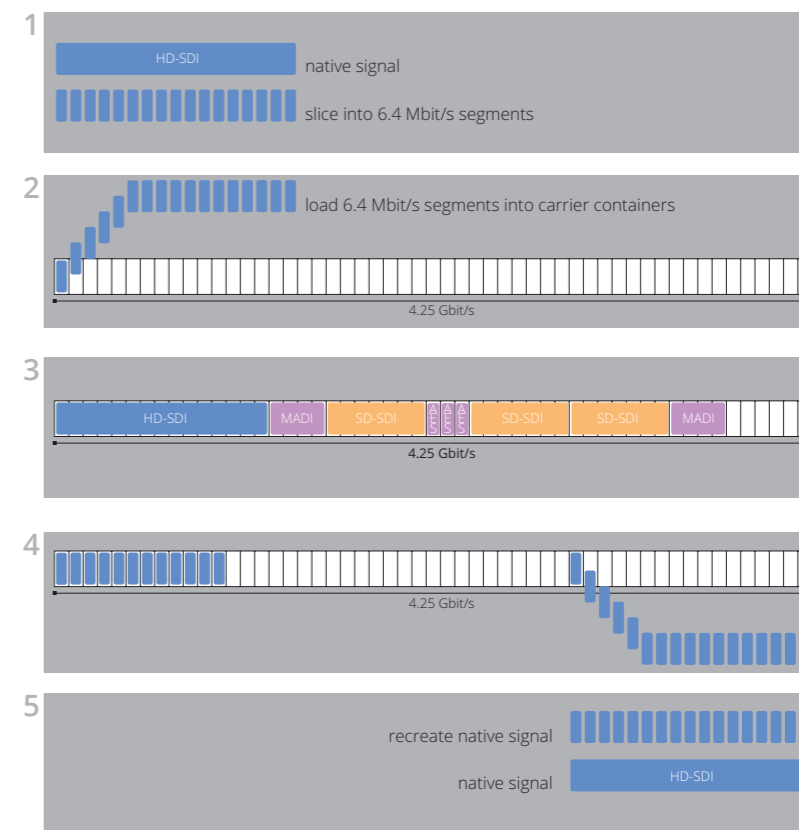


Bandwidth Optimization

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 to transport, AES3/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

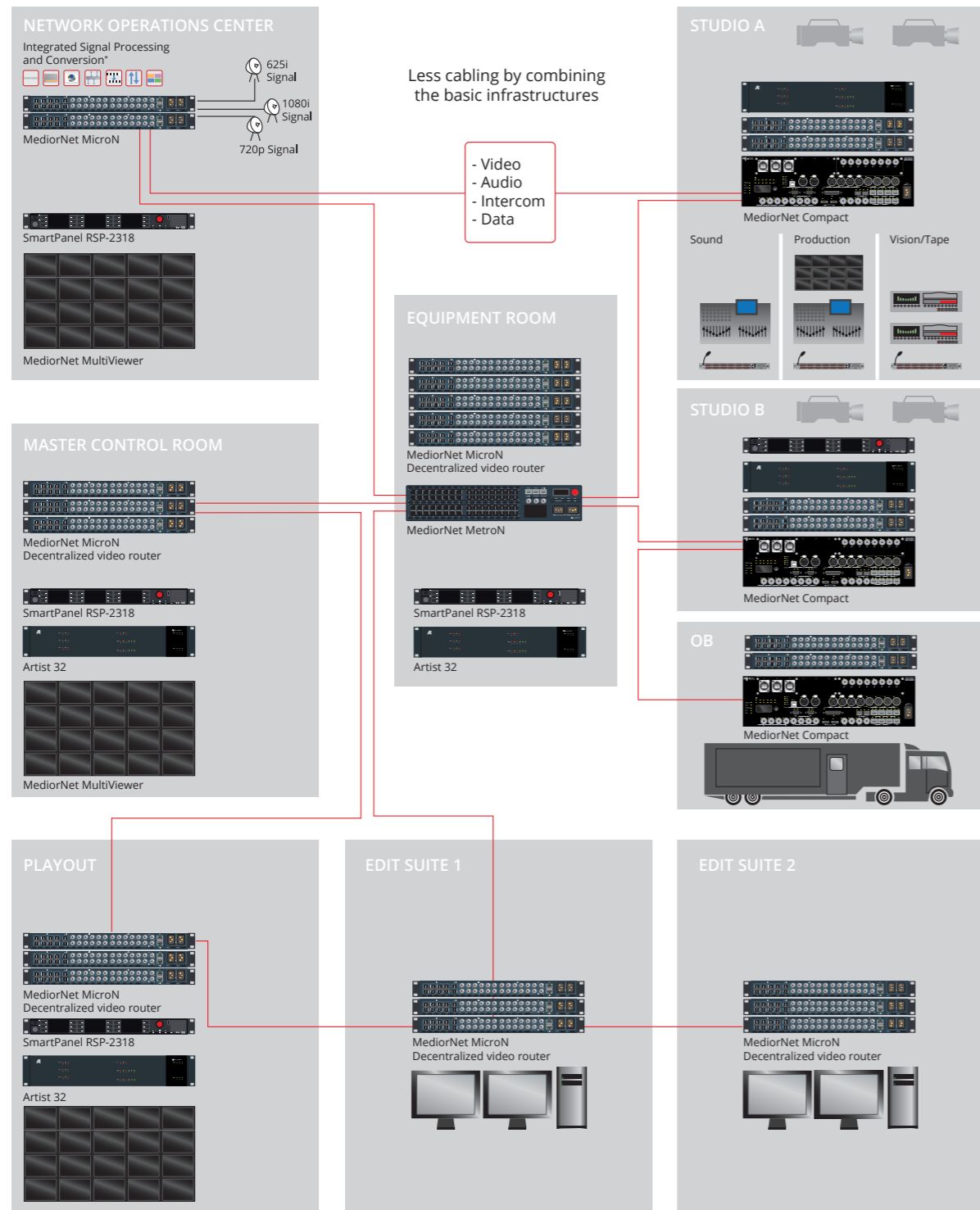
MediorNet can be synchronized to any external sync source or serve as a sync master for the complete installation. MediorNet supports the following sync standards:

Blackburst NTSC, TriLevel 720p25, TriLevel 1080p29.97, Blackburst PAL, TriLevel 720p24, TriLevel 1080p25, TriLevel

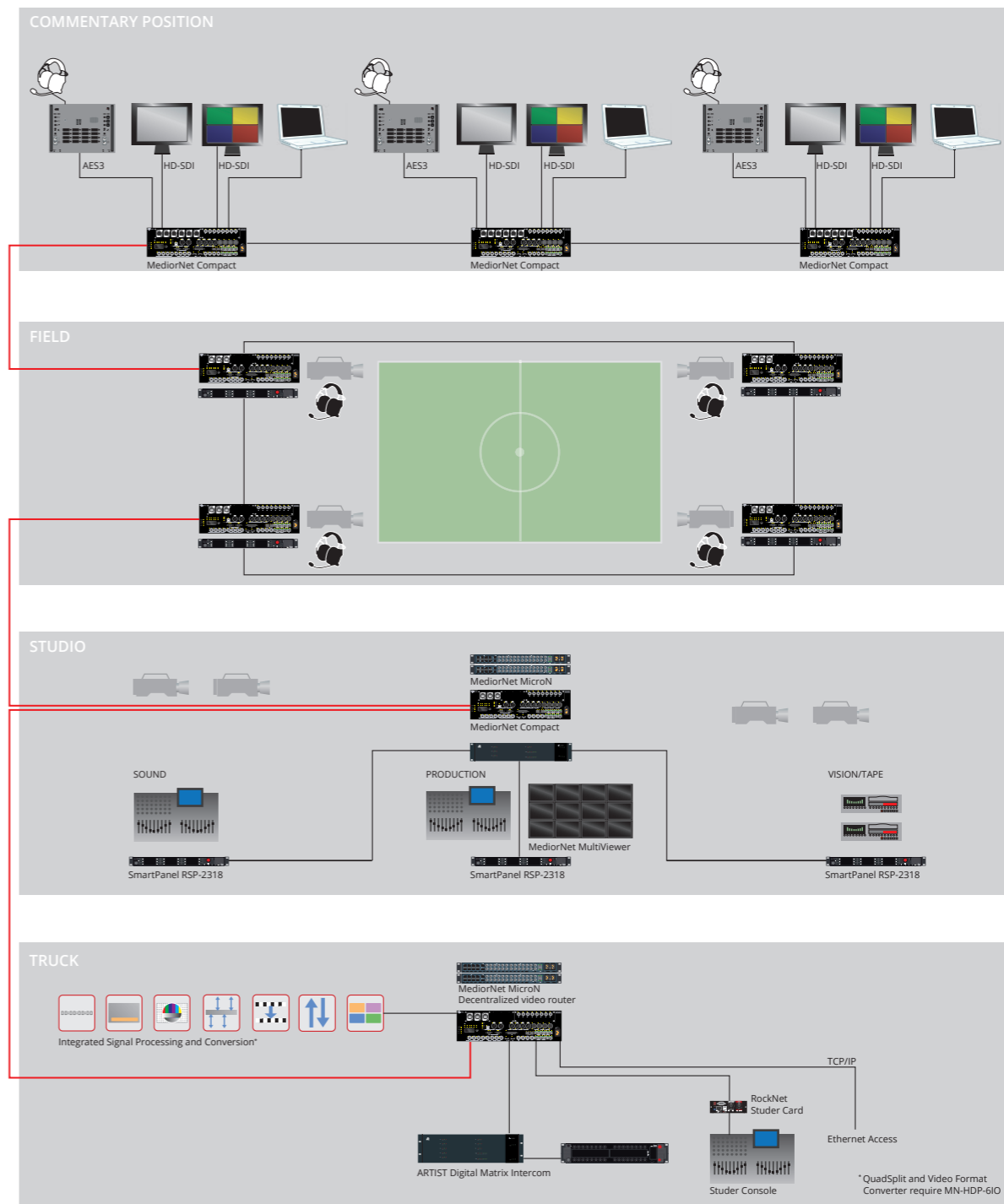
720p60, TriLevel 720p23.98, TriLevel 1080p24, TriLevel 720p59.94, TriLevel 1080i60, TriLevel 1080p23.98, TriLevel 720p50, TriLevel 1080i59.94, WordClock 48kHz, TriLevel 720p30, TriLevel 1080i50, WordClock 96kHz, TriLevel 720p29.97, TriLevel 1080p30, WordClock 192kHz

MediorNet Applications

Studio Infrastructure



Stadium Application



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

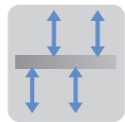
and conversion tools from Riedel or 3rd party manufacturers supporting the MediorNet standard, without any changes to the hardware.

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 Embedder / De-Embedder



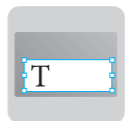
MediorNet's integrated 16 channel Embedder / De-Embedder embeds, de-embeds and shuffles any AES3/EBU signal.

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 Caption



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

MN Timecode Insertion



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

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 for 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 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 easily be accessed with one click on the "Views" window, which is floating above all other windows. The "Device Browser" shows all available nodes, the

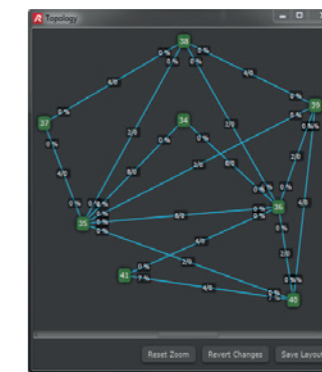
cards installed in the node and each connector of the specific media card. If a connector is selected, the "Connections" window shows all active connections signal routings. A "Matrix View" allows for a quick overview of all connections including matrix-style programming. Looking into the "Parameters" 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 und automatic routing
- » Multi-user support
- » Matrix view
- » User templates
- » Graphical Network Topology View



The MediorWorks Matrix View



Topology

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-S-B's VSM, AXON's Cerebrum, BFE's KSC Commander, Atos' BNCS, 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 bi-directional 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 (4,25G) 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
- » 16-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

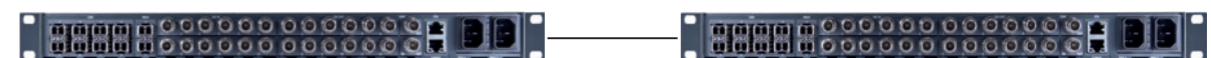
MicroN provides a high degree of flexibility in addressing the current and future demands of broadcast and live event productions. With a total of five powerful apps, MicroN gives you greater freedom in building sophisticated media infrastructures, from signal transport to full video router functionality

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

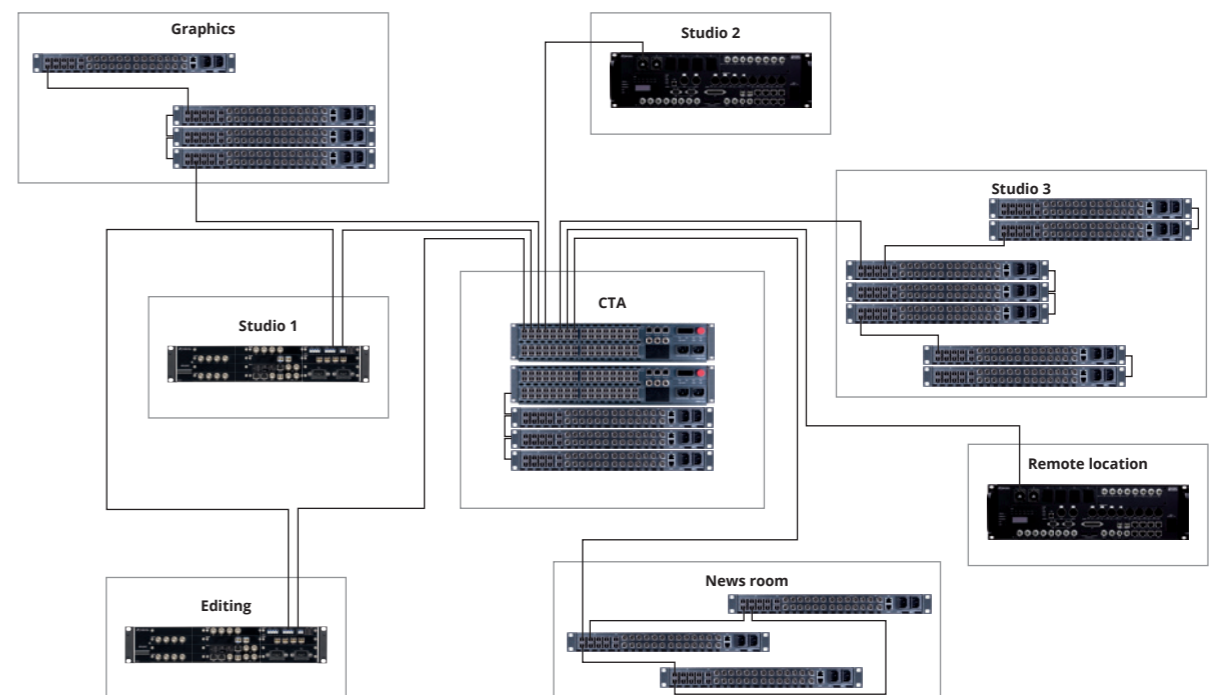
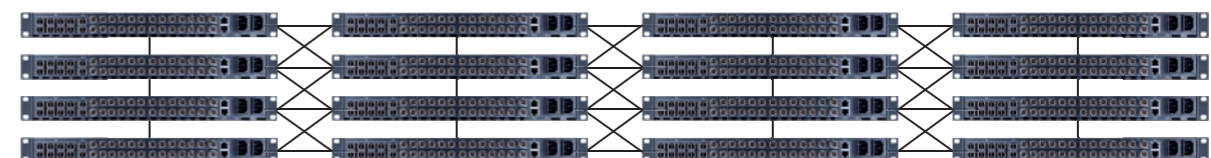
Gigabit Ethernet link. Not only does the app enable the hardware to operate standalone, but a single MicroN can act as 12x12 router and audio embedder / de-embedder with MADI and sync delay, while also providing video frame sync and delay.



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.



IP App for MicroN

The MediorNet MicroN IP App includes support for up to 4 SMPTE ST 2110-20 inputs and outputs plus 4 baseband 3G-SDI signals and 8 3G-SDI outputs, with 4 of those dedicated to monitoring the ST 2110-20 streams. Also supported are 4 MediorNet HighSpeed Links, AES67 audio, 2 optical MADI ports, and sync I/O. MediorNet MicroN IP also supports NMOS device discovery/registration and connection management or manual configuration for non-NMOS installations.

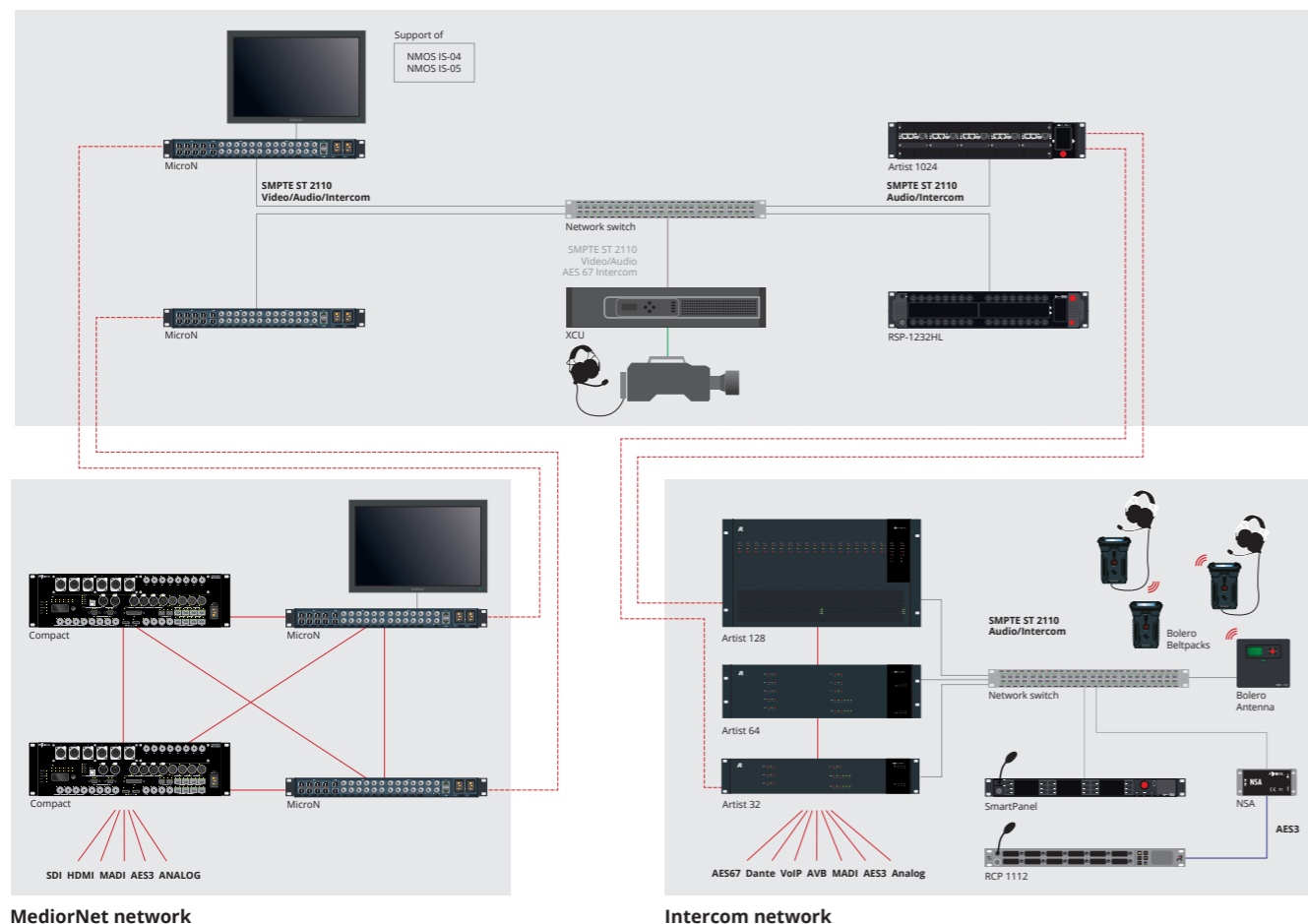
MediorNet MicroN IP is fully PTPv2 compliant and allows to synchronize MediorNet to either PTP or traditional sync signals (like BlackBurst).

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

IP interoperability



MultiViewer App for MicroN



MediorNet MultiViewer configuration tool

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.

MicroN – MultiViewer App

- » 18 channel processing (full flexible scaling and positioning)
- » Flexible access to an MediorNet input signal
- » 4 virtual screens to be routed to any MediorNet output
- » Numerous graphical widgets available
 - Video display (PiP)
 - Audio level meter
 - Under monitor display
 - Tally markers (frame, field)
 - Network synchronized clocks (analog, digital) and counters
 - Images
- » Easy and intuitive configuration via drag-and-drop editor
- » 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.

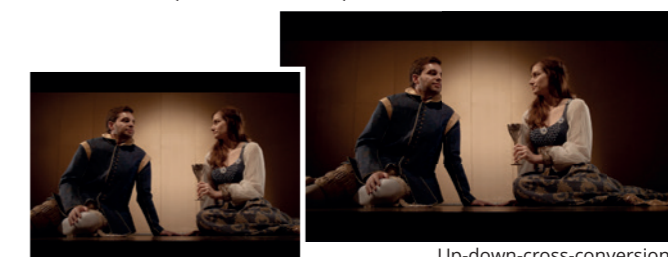
The MediorNet Processing App delivers the benefits of a decentralized signal network by enabling processing hardware to be placed anywhere it's needed, leveraging the network for sources and reducing system complexity.

MicroN – Processing App

- » 2 channel up/down/cross conversion
- » 4 channel color correction (YCbCr + RGB)
- » MultiViewer with 9 PiP and 2 screens



Color correction (for RGB and YCbCr)



Up-down-cross-conversion

MEDIORNET Compact

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 signal, 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)



- MN-C-OPT-HDMI-2I/2O (2x HDMI In / 2x HDMI Out)
- MN-C-OPT-HDMI-4I (4x HDMI In)
- MN-C-OPT-HDMI-4O (4x HDMI Out)



- MN-C-OPT-ETH-4 (4x Ethernet)



Fiber Options:



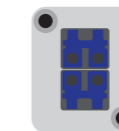
25G WDM Neutrik opticalCON QUAD*



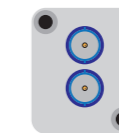
8.5G Neutrik opticalCON QUAD*



4.25G Neutrik opticalCON DUO*



8.5G Dual LC Duplex*



4.25G Dual ST*

*1310nm SM SFP
 **6x MediorNet High-Speed signals per link
 Other fiber options available on request (CWDM, special wavelength, high power SFPs, ...)

MN-CPSU – External Power Supply (for redundancy)



12V / 240W power supply unit in SR12 Smart Rack housing for up to two units in one Smart Rack SR-1 frame. Three 4pin output sockets each for full 20A current with electronic fuse and error indication. Suitable as redundant power supply for MediorNet Compact units.

For more devices from the Smart Rack series please refer to the "Fiber Accessories" section.

Fiber Options

Option Boards

MediorNet Compact PRO



MediorNet Compact PLUS



MediorNet Compact BASIC



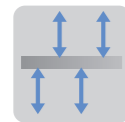
Integrated Signal Processing and Conversion

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.



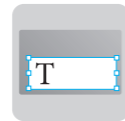
MN Test Pattern Generator

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.



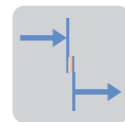
MN Caption

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



Video Output Phase Shift

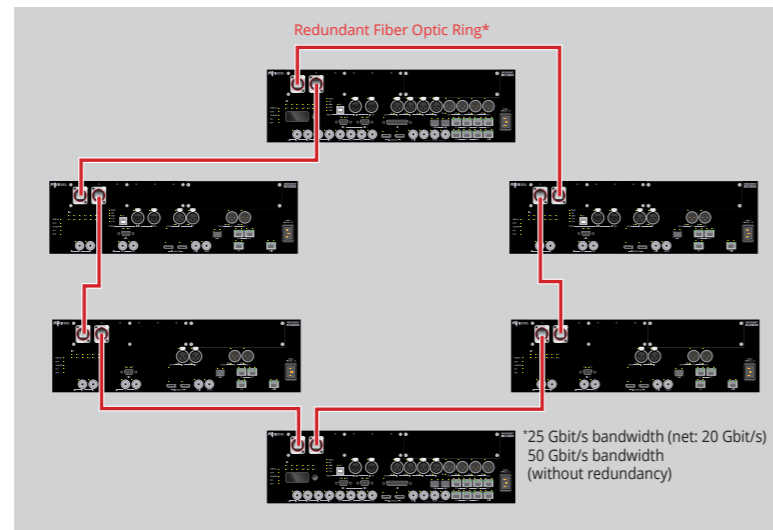
The video output phase shift feature is used to shift the the start of the video playout with respect to the genlock. The shift can be lagging (positive values) or leading (negative values). The genlock itself either locks to the reference or to the connected video input.



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.

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



Specifications MediorNet Compact

Features	MediorNet Compact BASIC	MediorNet Compact PLUS	MediorNet Compact PRO
Video In	2 x 3G/HD/SD-SDI	2 x 3G/HD/SD-SDI	4 x 3G/HD/SD-SDI
Video Out	2 x 3G/HD/SD-SDI	2 x 3G/HD/SD-SDI	4 x 3G/HD/SD-SDI
Slot for Option Boards	n/a	n/a	1 x
Option Boards			
MN-C-OPT-SDI-8I	n/a	n/a	8x Video In (3G/HD/SD-SDI)
MN-C-OPT-SDI-8O	n/a	n/a	8x Video Out (3G/HD/SD-SDI)*
MN-C-OPT-SDI-4I4O	n/a	n/a	4x In / 4x Out (3G/HD/SD-SDI)
DisplayPort Out	2x	2x	2x
AES3/EBU	2x	2x	4x
Audio In (analog)	2x	2x	4x
Audio Out (analog)	2x	2x	4x
RockNet-Interface	n/a	1x	1x
MADI (SFP)	1x	1x	2x
Ethernet	1x	1x	3x
GPI	n/a	n/a	10x GPI In / Out (individually switchable)
Serial (RS232, RS422, RS485)	1x	1x	2x
Sync In/Out	1x In / 1x Out	1x In / 1x Out	1x In / 3x Out

Overall	
Operating Temperature	0°C to +40°C (32°F to +104°F)
Power Requirements	100 – 240 VAC / 47 – 63 Hz 12 VDC ±10% (10.8 – 13.2 VDC)
Power Consumption	80 VA
Dimensions (H x W x D)	133 mm x 483 mm x 241 mm (3 RU x 19" x 9.5")
Weight	8.2 kg (18.1 lbs.)

*4x 3G/HD/SD-SDI and 4x HD/SD-SDI

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:

Blackburst NTSC, TriLevel 720p25, TriLevel 1080p29.97, Blackburst PAL, TriLevel 720p24, TriLevel 1080p25, TriLevel 720p60, TriLevel 720p23.98, TriLevel 1080p24, TriLevel 720p59.94, TriLevel 1080i60, TriLevel 1080p23.98, TriLevel 720p50, TriLevel 1080i59.94, WordClock 48kHz, TriLevel 720p30, TriLevel 1080i50, WordClock 96kHz, TriLevel 720p29.97, TriLevel 1080p30, WordClock 192kHz

MEDIORNET MetroN

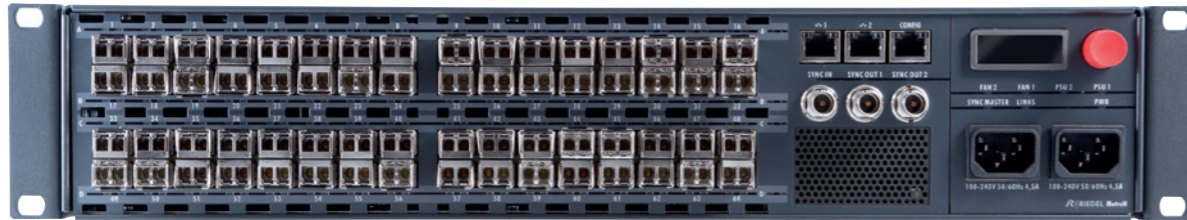
In enabling Riedel's acclaimed networked approach to signal distribution and routing, the 2-RU large-scale MediorNet MetroN Core Router provides intense real-time signal-routing capacity (32x10G/32x4.25G ports) and offers non-blocking switching.

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 – 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)

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.

MEDIORNET Fiber Accessories

SMART RACK

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.



SR-1 Smart Rack Module Carrier System

The Smart Rack SR-1 module carrier system is a 19"/1RU universal housing offering space for 4 x SR11 sized modules, 2 x SR12 sized modules or any combination thereof. The individual modules can be mounted with the rear-side to the front by simply inserting the module backwards. Riedel's Smart Rack system features a safe and convenient locking mechanism for the modules providing a solution to conveniently rack mount a wide range of accessories from all Riedel product lines.



MC-WDM Dual WDM Multiplexer and De-Multiplexer

The Riedel MC-WDM interface is 4.74" wide (SR11 housing) and provides two multiplexer/de-multiplexers 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



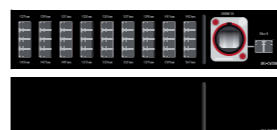
MC-WDM-Q

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 SFP's 1310nm/1490nm/1550nm (SFP modules not included). Insertion Loss max. 6.9dB, Output Loss max. 2dB. Compatible with MediorNet Compact WDM options MN-C-xxx-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 SFP's 1310nm/1490nm/1550nm (SFP modules not included). Insertion Loss max. 6.9dB, Output Loss max. 2dB. Compatible with MediorNet Compact WDM options MN-C-xxx-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; 1291nm; 1311nm; 1311nm; 1331nm; 1331nm; 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.



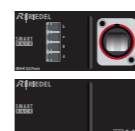
MC-CWDM-L

CWDM Multiplexer and De-Multiplexer module (passive) for up to 18 duplex fiber connections, also recommended for interconnecting MediorNet frames. CWDM connection with 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 Demultiplexer module (passive) for up to 4 duplex fiber connections, also recommended for interconnecting 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 SmartRack 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.

MEDIORNET KVM

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, smartcard 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-D 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)



MN-KVM-PC (local)

MN-KVM-MON (remote)

	Video:	1x DVI-I in (no HDCP) 1x DVI-I out	1x DVI-D out
Interfaces	USB 2.0:	1x USB-B (PC)	4x USB-A (devices)
	Audio:	1x 3.5mm jack socket (Line In) 1x 3.5mm jack socket (Speaker)	1x 3.5mm jack socket (Line In) 1x 3.5mm jack socket (Speaker)
Video	Signal type:	DVI-I	DVI-D
	Resolution Color mode:	max. 1920x1200 @ 60Hz 24bit	max. 1920x1200 @ 60Hz 24bit
Audio	Type:	analog	analog
	Bandwidth:	16bit, 44kHz, 2ch	16bit, 44kHz, 2ch
Housing	Material:	anodised aluminium	anodised aluminium
	Dimension (W x H x D):	97.5 x 40 x 103.5 mm	97.5 x 40 x 103.5 mm
	Weight:	302g	291g
Power supply	Type:	International wall power supply 12 VDC 1A	International wall power supply 12 VDC 1A
Power input	Operation:	6W	6W without USB devices
Operation environment	Temperature:	0 to +45 °C	0 to +45 °C
	Humidity:	< 90%, non-condensing	< 90%, non-condensing

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 GT450) / 600m (opt. on SK4731-R) / other cable lengths on request.

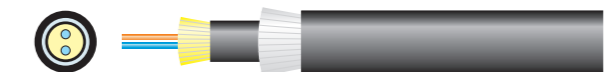
Riedel Pure XT is available in 10m / 100m (optional on GT380 cable drum) / 150m (opt. on GT450) / 300m (opt. on SK4731-R) / other cable lengths on request.



Riedel PURE CS D
Ruggedized Tactical Fiber Cable / Ø 5.7 mm / Single-mode
Neutrik opticalCON DUO connectors



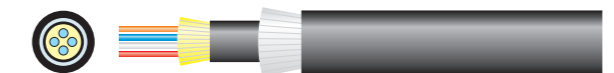
Riedel PURE XT D
Ruggedized Dual Jacket Tactical Fiber Cable
Ø 9.0 mm / Single-mode
Neutrik opticalCON DUO connectors



Riedel PURE CS Q
Ruggedized Tactical Fiber Cable / Ø 5.7 mm / Single-mode
Neutrik opticalCON QUAD connectors

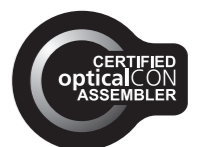


Riedel PURE XT Q
Ruggedized Dual Jacket Tactical Fiber Cable
Ø 9.0 mm / Single-mode
Neutrik opticalCON QUAD connectors



PURE – Features

- » Extremely rugged TAC (Tactical) fiber cable
- » Very flexible, abrasion & chemical resistant PUR jacket
- » Low bending radius (G.657A specified)
- » No waterpeak – fully CWDM and DWDM applicable
- » Exclusively with Neutrik opticalCON QUAD or opticalCON DUO connectors



ROCKNET
DIGITAL
AUDIO
NETWORK



Performance Audio Networks

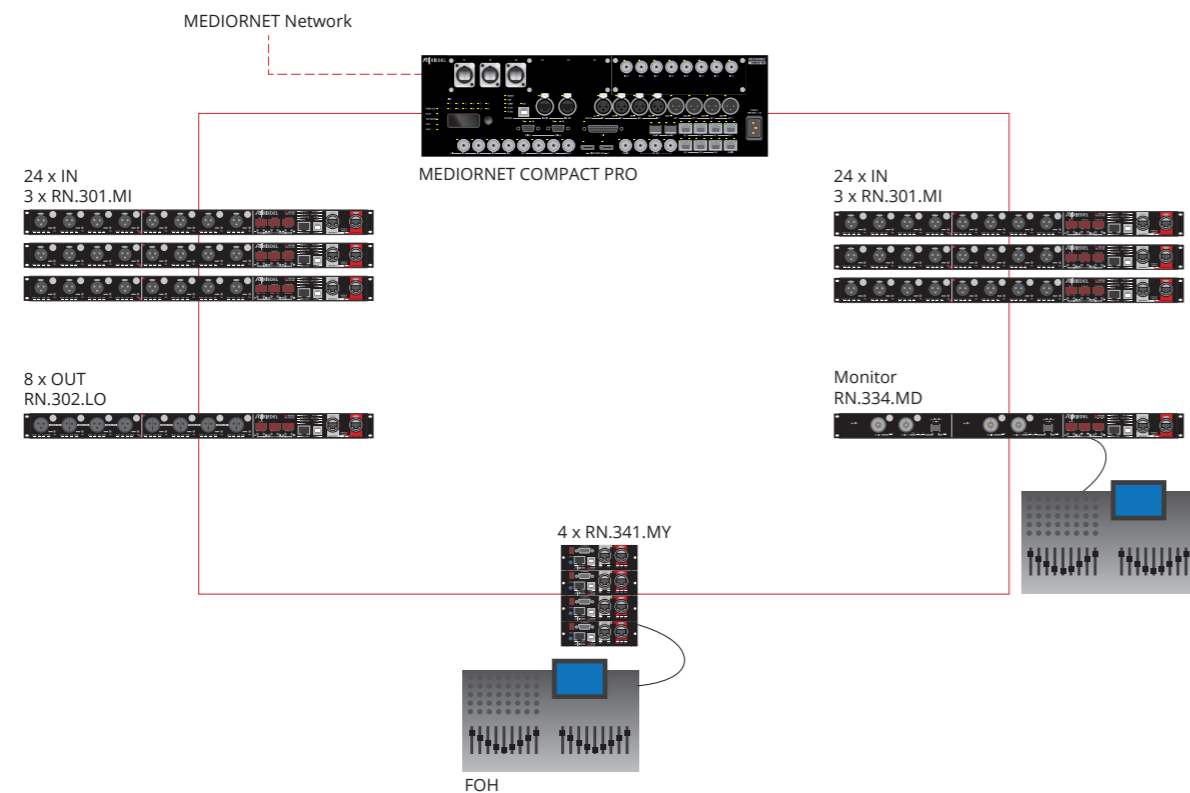
RockNet is a real-time, low latency audio distribution network tailored to tour and installed sound applications. RockNet provides a universal solution to almost any imaginable audio distribution challenge and behaves very much like a traditional analog split system. It conveys up to 160 24 bit/48 kHz 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.

Default mode displays the status of the device when the system is in normal operation and shows:

- Channel assignment for first channel block
- Channel assignment for second channel block
- Device ID [1 to 99]

The 160 available channels can be routed as single channels or as blocks of four sequential channels (Quads). This efficient concept allows the user to easily route audio to units on the same ring.

Channel mode displays and controls each channel parameter. By pushing the select button beside the XLR connector of the respective channel, the parameter values are displayed and can be adjusted.



Options mode accesses general device setup:

- 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 CAT5 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

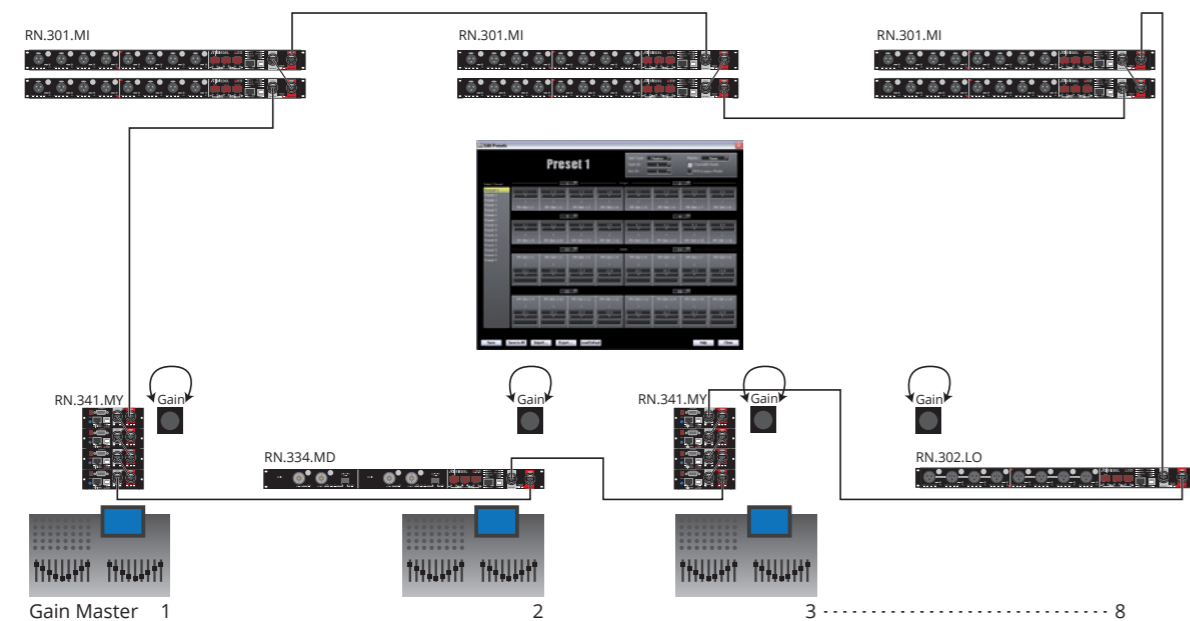
Independent gain as an integrated solution, i.e. without using an additional passive splitter, is a highly desired feature in digital live sound environments (digital mixing consoles in combination with digital audio networks).

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.

Independent Gain allows individual gain control for up to 8 mixing consoles in a single RockNet audio network. One of the mixing desks is defined as being the Gain Master Console. This console has access to the analog gain of the RockNet microphone pre-amps on stage via the embedded console remote control protocol. Any other console is a slave to this master console.

A change of the gain setting on any console of the network will be automatically compensated for by all other consoles no matter if the change is done at the Gain Master Console or a slave console. Independent Gain can be activated via RockWorks, the remote control software for RockNet. The function is implemented into the Edit Preset menu of RockWorks. The Edit Preset menu provides a group selection field where up to eight groups can be assigned to the respective RockNet interface cards or MADI ports.



ROCKWORKS RockNet Remote Control Software

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-8AE).



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, PMSD, PMSD RH, TX4n, TX5n, TX6n.



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: Soundcraft V11, V12, V14, V16 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. Each CAT5 interconnection can be up to 150 m* (500 ft) long. 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.

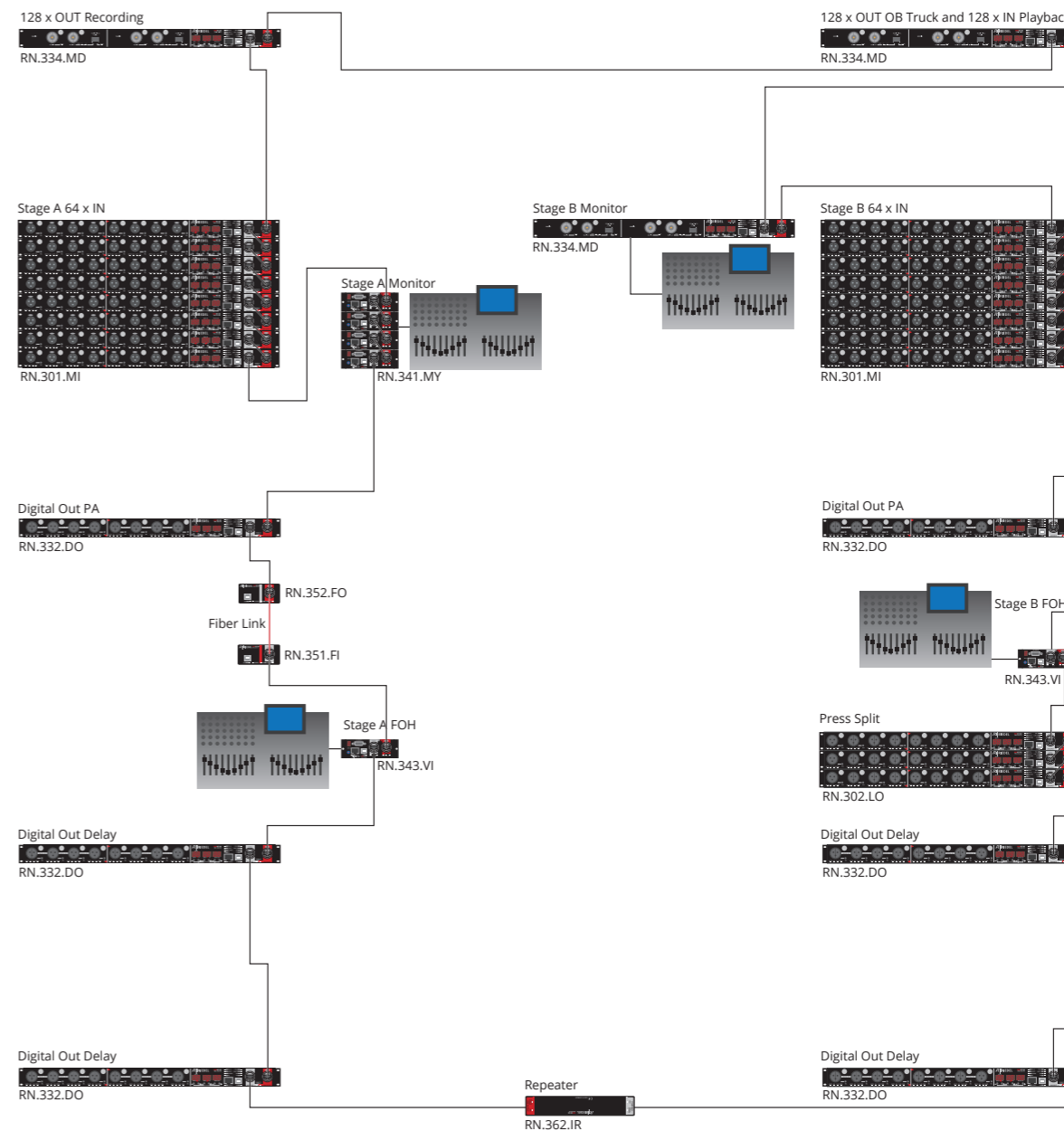
The RN.351.FI and RN.352.FO consist of the standard RockNet CAT5 Network Interface inputs and outputs on the front panel, while the rear of the products is designed with locking duplex fiber connectors and a locking IEC power connector. The converters feature modular rugged enclosures.

Features:

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

ROCKNET Applications

RockNet 300 Application: Live Recording Event with two Stages



General Network Specifications

Audio Data Rate	2 x 184.32 Mbit/s (redundant ring)	
Ancillary Data Rate	10 Mbit/s sustained data rate	
Number of Nodes	1 .. 99	
Sample Rate	48 kHz, 96 kHz	+ / - 10 ppm (internal)
		+ / - 80 ppm (external lock range)
Number of Channels	160 @ 24 Bit / 48 kHz	
	80 @ 24 Bit / 96 kHz	
	120 @ 32 Bit / 48 kHz	
	60 @ 32 Bit / 96 kHz	
Delay	400 µs D In - D Out @ 48 kHz	maximum system size (99 network devices within 10 km system perimeter)
	850 µs A In - A Out @ 48 kHz	
Cable Length	150 m CAT5e Cable	max. distance between two network devices (depending on cable quality)
	2 km Multi Mode Fiber	
	20 km Single Mode Fiber	
Wordclock In	TTL / 75 Ω BNC Connector	
Wordclock Out	TTL / 75 Ω BNC Connector	
USB Port	USB 1.1 / 2.0 compatible	
Ethernet Port	10 BaseT / 100 BaseT	
Operating Temperature	0 .. 50° C	32 .. 122° F
Power Requirements	100 .. 240 VAC	47 .. 63 Hz

RN.301.MI Microphone / Line Input Interface

Gain Range	-6 .. 66 dB	150 Ω Source
Gain Step	1 dB	+/- 1 dB
Sensitivity	+30 dBu .. -42 dBu	Max. before clip
Max. Input Level	+30 dBu	
Input Impedance	5.5 kΩ	
Phantom Power	+48 V	
Mute	selectable per channel	
Equivalent Input Noise (EIN)	-127 dBu	@ Gain 66 dB
	-151 dBFS	150 Ω Source, 20 kHz BW
	-122 dBu	@ Gain > 30 dB
Dynamic Range	119 dB	@ Gain = -6 dB 150 Ω Source, "A" weighted

Frequency Response	-0.1 dB	20 Hz .. 20 kHz	@ FS = 48 kHz
Common Mode Rejection	> 100 dB	@ 50 Hz-15 kHz	150 Ω Source, > 40 dB Gain
Crosstalk	< -130 dB	@ 15 kHz	adjacent channels
Total Harmonic Distortion	0.006 %	@ 66 dB Gain	Full scale, 100 Hz-10 kHz 150 Ω Source, 20 kHz BW
Delay	420 µs		@ FS = 48 kHz

RN.302.LO Line Output Interface

Max. Output Level	+24 dBu	+/- 0.2 dB	@ digital full scale, 600 Ω load
Output Level Range	-9 .. +24 dBu		
Output Impedance	< 1 Ω		
Impedance Imbalance	< 1%		
Mute	selectable per channel		
Noise	-94 dBu	@ +24 dBu Out	"A" weighted
Dynamic Range	119 dB		
Crosstalk	< -130 dB	@ 15 kHz	adjacent channels

Frequency Response	-0.1 dB	20 Hz .. 20 kHz	@ FS = 48 kHz
	-0.5 dB	20 Hz .. 40 kHz	@ FS = 96 kHz
Total Harmonic Distortion	< 0.001%	@ +24 dBu Out	100 Hz - 10 kHz
	< 0.002%	@ + 4 dBu Out	600 Ω Load, 20 kHz BW
Resolution	24 Bit		
Sample Rate	48 kHz, 96 kHz*		
Delay	330 µs		@ FS = 48 kHz

General Dimension and Specifications

Operating Temperature	32 .. 122° F	0 .. 50° C
Power Requirements	100 .. 240 VAC	47 .. 63 Hz
Power Consumption	25 W	
Dimensions (W x H x D)	19" x 1.75" x 7.9"	483 x 44 x 200 mm
Weight	6.6 lbs	3.0 kg

RN.331.DD / RN.332.DO / RN.335.DI Digital Interfaces

Input Format	AES3	
Input Impedance	110 Ω	
Min. Input Level	200 mVpp	
Sample Rate	48 kHz, 96 kHz	
Resolution	24 Bit	
Signal Delay	150 µs	
Level Indicators	Signal, Clip	
Mute	selectable per channel	

Output Format	AES3	
Output Impedance	110 Ω	
Output Level	> 5 Vpp @ no load	
Sample Rate	48 kHz, 96 kHz	
Resolution	24 Bit	
Signal Delay	150 µs	
Level Indicators	Signal, Clip	
Mute	selectable per channel	

RN.334.MD RockNet MADi Interface

Input Format	AES10 (MADI)	
Electrical Inputs	Input Impedance	75 Ω
	Min. Input Level	200 mVpp
Optical Inputs	Wavelength / Fiber Type	1.300nm MM/GI
	Connector	Duplex LC (SFP Module*)
Frame Format (Channels per Frame)	56 Ch, 64 Ch	@ 48 kHz
	28 Ch, 32 Ch	@ 96 kHz
Interface Priority	selectable (electrical/optical)	
Sample Rate	48 kHz, 96 kHz	
Resolution	24 Bit	
Signal Delay	125 µs	

Output Format	AES10 (MADI)	
Electrical Outputs	Output Impedance	75 Ω
	Output Level	600 mVpp
Optical Outputs	Wavelength / Fiber Type	1.300nm MM/GI
	Connector	Duplex LC (SFP Module*)
Frame Format (Channels per Frame)	56 Ch, 64 Ch	@ 48 kHz
	28 Ch, 32 Ch	@ 96 kHz
Sample Rate	48 kHz, 96 kHz	
Resolution	24 Bit	
Signal Delay	125 µs	

*SFPs need to be purchased separately.

RN.341.MY Yamaha Interface Card

Number of Channels	16 Inputs, 16 Outputs
Resolution	24 Bit
Sample Rate	48 kHz, 96 kHz
Remote Control Interface	RS-422, AD8HR protocol compatible
USB Port	USB 1.1 / 2.0 compatible
Ethernet Port	10 BaseT / 100 BaseT
Operating Temperature	0 .. 50° C 32 .. 122° F

RN.343.VI Soundcraft Studer Interface Card

Number of Channels	64 Inputs, 64 Outputs
Resolution	24 Bit
Sample Rate	48 kHz, 96 kHz
Wordclock	Wordclock In/Out
USB Port	USB 1.1 / 2.0 compatible
Ethernet Port	10 BaseT / 100 BaseT
Operating Temperature	0 .. 50° C 32 .. 122° F



RILINK
GLOBAL
NETWORK
SERVICES

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:

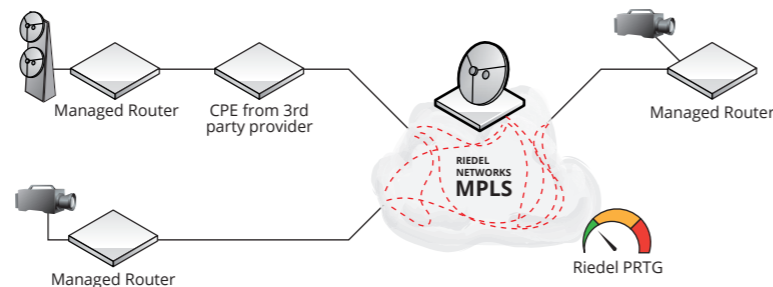
RiLink's latency is provides high quality data connectivity with short data run time as known from fixed networks. This signal propagation time is significantly shorter than any satellite link and signals exhibit significantly less jitter. Within Europe, for instance, signal runtime on the Riedel Network 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 (intercom/VoIP), 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 clients can access to 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 located near Frankfurt and available to assist. Trouble-shooting is 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 unwished 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:

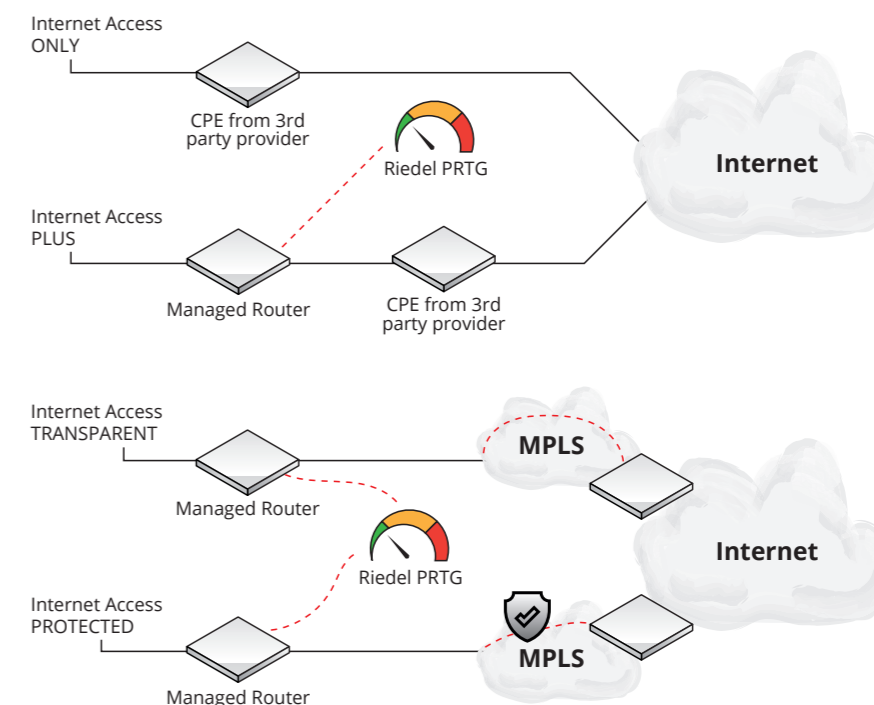
in addition a managed router provided by Riedel Networks with active Network Monitoring.

Direct Internet Access - transparent:

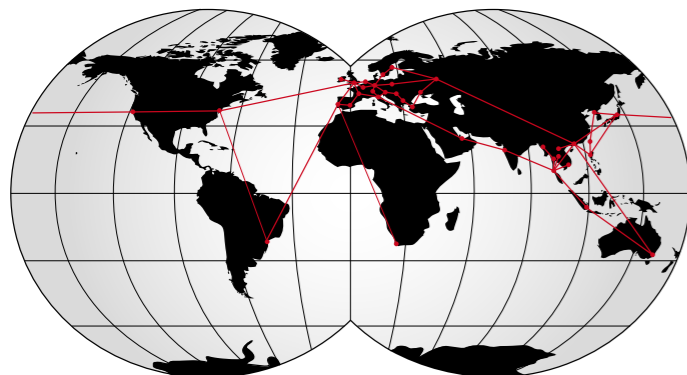
Internet Access via the Riedel MPLS network directly to one of the Internet peering points, fully managed and monitored by the Riedel NOC team.

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.



Riedel's Global Fiber Network



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.

RiLink References (selected)

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-Continent-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 A/V 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 headquarter for transfer of live and preproduced content.
- **RTL @ NewYork**, 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
- **RussiaToday @ 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

How to get a quote for your application

Please contact your Riedel sales manager or send the following information to rmlink@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



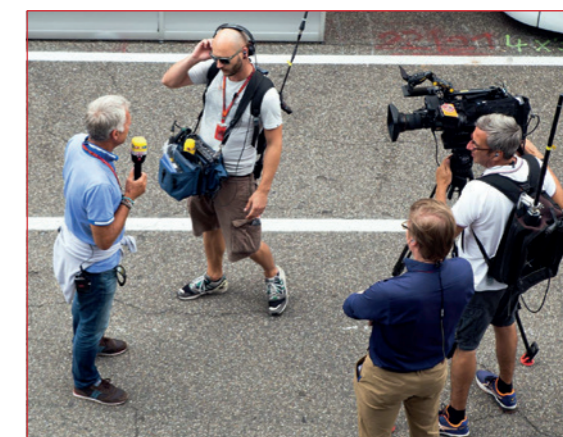
Customer: House of Switzerland, P&G and others
 Project: Nations Village Winter Games 2018 in Pyeongchang
 Task: Internet and MPLS for media representatives and broadcasters



Customer: ITR
 Project: DTM
 Task: MPLS and public internet for up to 60 live streams on major social media platforms and private video streams to teams and organizer



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 racetrack, provision of archive access & intercom connectivity to main facility in Cologne (Germany)

ARTIST/
TANGO
DIGITAL
MATRIX
INTERCOM



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 a 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, MADI, 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 NMOS) and JT-NM tested

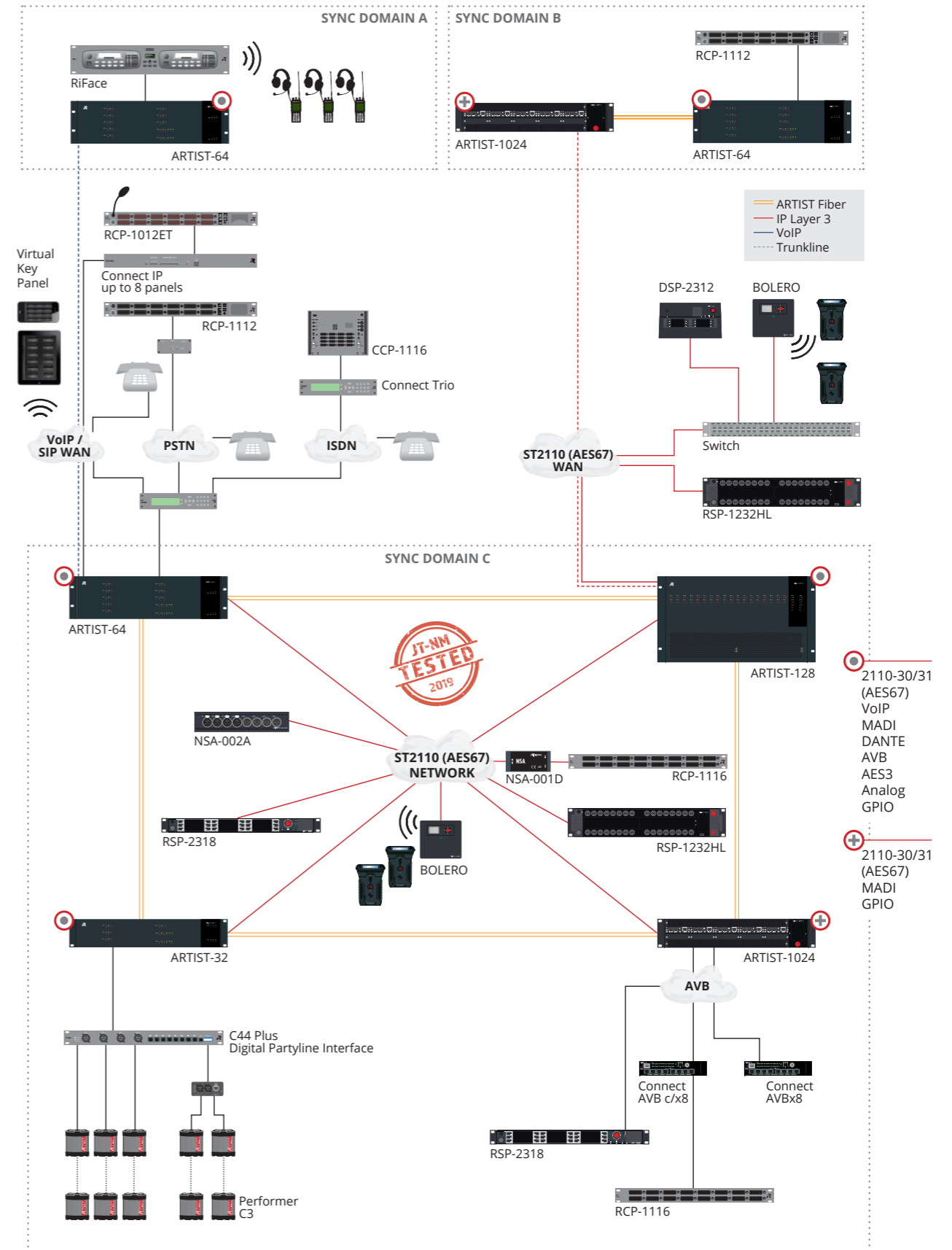
Any comms solution is only as good as its configuration software – and the Director software is just one more differentiator that sets Artist apart from the rest. Powerful and user-friendly, Director offers industry-leading configuration upload times and an intuitive interface with drag-and-drop simplicity 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



ARTIST-1024

The Next Piece of the Puzzle

Artist-1024 is the next 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 boasts 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 provides ten bays for UICs, with two being reserved solely for routing and networking UICs. The remaining eight bays can be flexibly equipped with UICs of various configurations to provide subscriber connectivity. The integral mixer on each subscriber card can be scaled from 8 to 128 ports per card and can access all 1024 channels of the Artist backbone. In addition, four expansion slots are available for various GPIO or synchronization applications. Since UICs support internal sample rate conversion, each card can be connected to a different clock environment (MADI, PTPv2). An optional sync module can be used to sync to Wordclock, Blackburst, and PTPv2. From any sync source, the entire Artist system can be synced to any connected sync domain.

Artist-1024 has been architected with redundancy at its core. By supporting multiple redundancy schemes including N+1, NIC, and SMPTE 2022-7, it can provide an unprecedented degree of robustness and reliability. In addition to SMPTE 2022-7-compliant stream redundancy, there are several redundancy mechanisms in place to avoid single points of failure: The N+1 subscriber redundancy scheme includes a hot spare card that can take over the configuration of any other subscriber card while the NIC scenario allows a seamless handover between the two routing cards of a single node. As expected from a professional system, all control logic and data links within the frame are redundant. The advanced frame design provides additional security with two load-sharing PSUs and a fan module with redundant fan units. The sum of these measures equals the most comprehensive comms safety net available on the market.

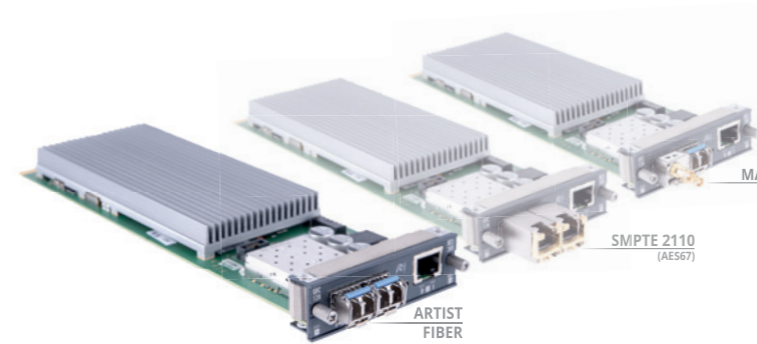
The frame design is rounded off by an e-ink display that provides configuration and licensing information, even when powered off. Artist-1024 also offers flexible mounting options: The frame can be mounted with an offset of 0, 25, 50 or 75mm and can be rotated in the rack. If required, the ventilation 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 push the boundaries of innovation and is passionate about shaping the future of production communications.

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
- » Flexible licensing scheme
- » Advanced frame design with reversible front-to-rear cooling

The Universal Interface Card (UIC)



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

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
- » Reconfigurable with the click of a button in Director

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.

VAM = Virtual Artist Matrix License

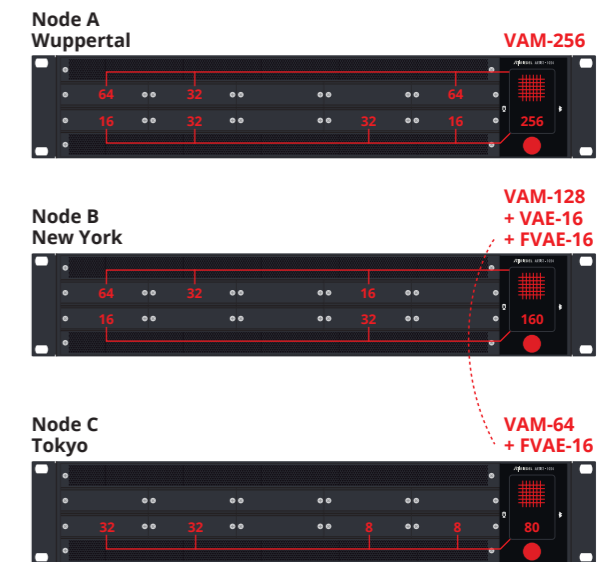
- A cost-beneficial bundle of ports (16, 32, 64, 128, 256, 512, 1024)
- Node-locked to a 1024 node
- One VAM per node

VAE = Virtual Artist Expansion License

- Adds ports to a VAM in 16 port blocks
- Node-locked to a 1024 node
- Multiple VAEs 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



ARTIST at a Glance

- 1024**
- 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

- 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

- 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, RRCS, SNMP, Trunking)



- 32 / 64 / 128**
- Unparalleled connectivity:
 - SMPTE2110-30/31 (AES67)
 - VoIP
 - MADI
 - DANTE
 - AVB
 - AES3
 - Analog
 - GPIO

Intercom System

Product name	Artist Intercom
Non-blocking subscriber ports per ring	1024
Artist nodes per ring	50+
Trunked Artist rings	25+
Subscriber ports in trunked systems	6000+
Redundant fiber switchover	Fully automatic & seamless

Intercom Nodes

Product name	ARTIST-32	ARTIST-64	ARTIST-128	ARTIST-1024
Subscriber ports per node (min - max)	8-32	8-64	8-128	16-1024
Subscriber ports per card (min - max)	8	8	8	8-128
CPU / NIC card bays	2	2	2	2
Client / subscriber card bay	4	8	16	8
GPIO card bays	Client card bays	Client card bays	Client card bays + 2	4
Sync card / module bays	2	2	2	2 (uses 2 GPIO bays)
Display	-	-	-	E-ink
Mounting options	19" Rack Ears	19" Rack Ears	19" Rack Ears	19" Rack Ears (offset 0, 2.4, 5, 7.5cm) 180° rotatable
Width	19" / 483mm	19" / 483mm	19" / 483mm	19" / 483mm
Height	2RU / 88mm	3RU / 130mm	6RU / 264mm	2RU / 88mm
Depth	370mm	370mm	370mm	404mm
Weight (inc. PSUs and fan units)	5,15kg	5,6kg	11,8kg	6,3kg
Airflow direction	side-to-side	side-to-side	front-to-rear	front-to-rear (reversible)
Redundant PSUs	✓	✓	✓	✓
Hot swappable PSUs	✓	✓	✓	✓
Load-sharing PSUs	-	-	-	✓
Input voltage	90-264 VAC, 50/60 Hz	90-264 VAC, 50/60 Hz	90-264 VAC, 50/60 Hz	85-264 VAC, 50/60 Hz
Power consumption	max. 200W	max. 250W	max. 400W	max. 225W

Interface / Subscriber Cards

Artist Fiber	CPU-128F	CPU-128F	CPU-128F	UIC-128
SMPTE 2110-30/31 (AES67)	AES67-108	AES67-108	AES67-108	UIC-128
MADI	MADI-108	MADI-108	MADI-108	UIC-128
VoIP	VoIP-108	VoIP-108	VoIP-108	-
DANTE	DANTE-108	DANTE-108	DANTE-108	-
AVB	AVB-108	AVB-108	AVB-108	-
AES3	AES-108	AES-108	AES-108	-
ANALOG	ANALOG-108	ANALOG-108	ANALOG-108	-
GPIO	GPI-108	GPI-108	GPI-108	GPI-1024

Redundancy

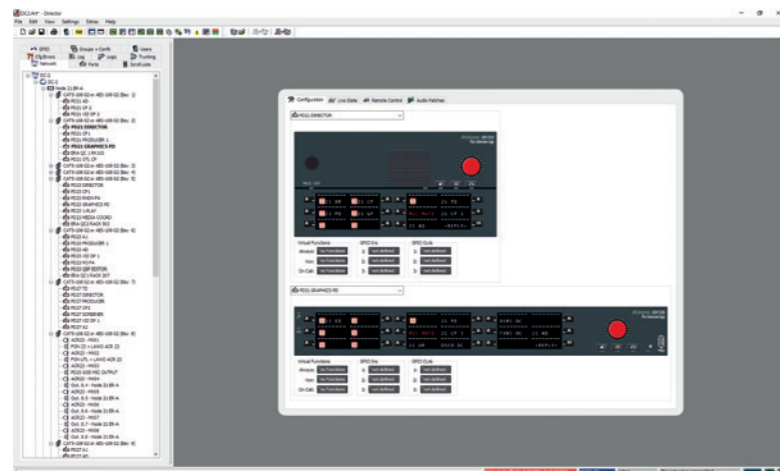
CPU / NIC	✓	✓	✓	✓
Dual Fiber Ring	✓	✓	✓	✓
N+1 Redundancy	-	-	-	✓
SMPTE 2022-7	-	-	-	✓

IP Networking & Connectivity

SMPTE 2110-10 / -30 / -31	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
SMPTE 2110-30	Level A & B	Level A & B	Level A & B	Level A & B & C
PTP	IEEE 1588:2008	IEEE 1588:2008	IEEE 1588:2008	IEEE 1588:2008
ST-2059-2 / Media Profile / AES R16	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
IP Layer3 WAN	VoIP, SMPTE 2110-30/31	VoIP, SMPTE 2110-30/31	VoIP, SMPTE 2110-30/31	SMPTE 2110-30/31
IGMPv3 / SSM	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓
JT-NM TR-1001:1	✓	✓	✓	✓
DHCP	✓	✓	✓	✓
DNS	✓	✓	✓	✓
NMOS IS-04 / -05 / -08	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
SDP import / export	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓
In-band / out-band control	- / ✓	- / ✓	- / ✓	✓ / ✓

DIRECTOR

Intuitive Configuration Software



Access, set-up and control of any aspect of an Artist system consisting of hundreds of intercom ports on multiple nodes is achieved using the comfortable and intuitive Director 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.

An extensive user level control allows for setting up user groups with dedicated access rights to the system. Not only whole configurations, but also parts of configurations can be saved and reloaded as "partial files". This allows system setups for different types of productions to be easily stored and recalled.

DIRECTOR – Key Benefits

- » Intuitive user interface
- » Easy to learn and use
- » Drag-and-drop configurations
- » Real-time status of the entire system
- » IP configuration and IP statistics for ST2110 networks
- » Multiple PC access with user level control
- » Configurations are stored in the matrix
- » Remote control
- » Real-time cross point view
- » Versatile IFB tools
- » Audio patches
- » Programmable logic functions
- » Free definable markers

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.

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 conference 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.

Riedel Router Control Software RRCS 2.0

The Riedel Router Control Software (RRCS) provides a universal XML interface for enabling third party router control systems to control Riedel Artist Intercom systems. Version 2.0 of the RRCS Software features an expanded set of XML commands for the software to allow for an even deeper integration of external third party control systems and Artist.

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. The 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.

TANGO

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

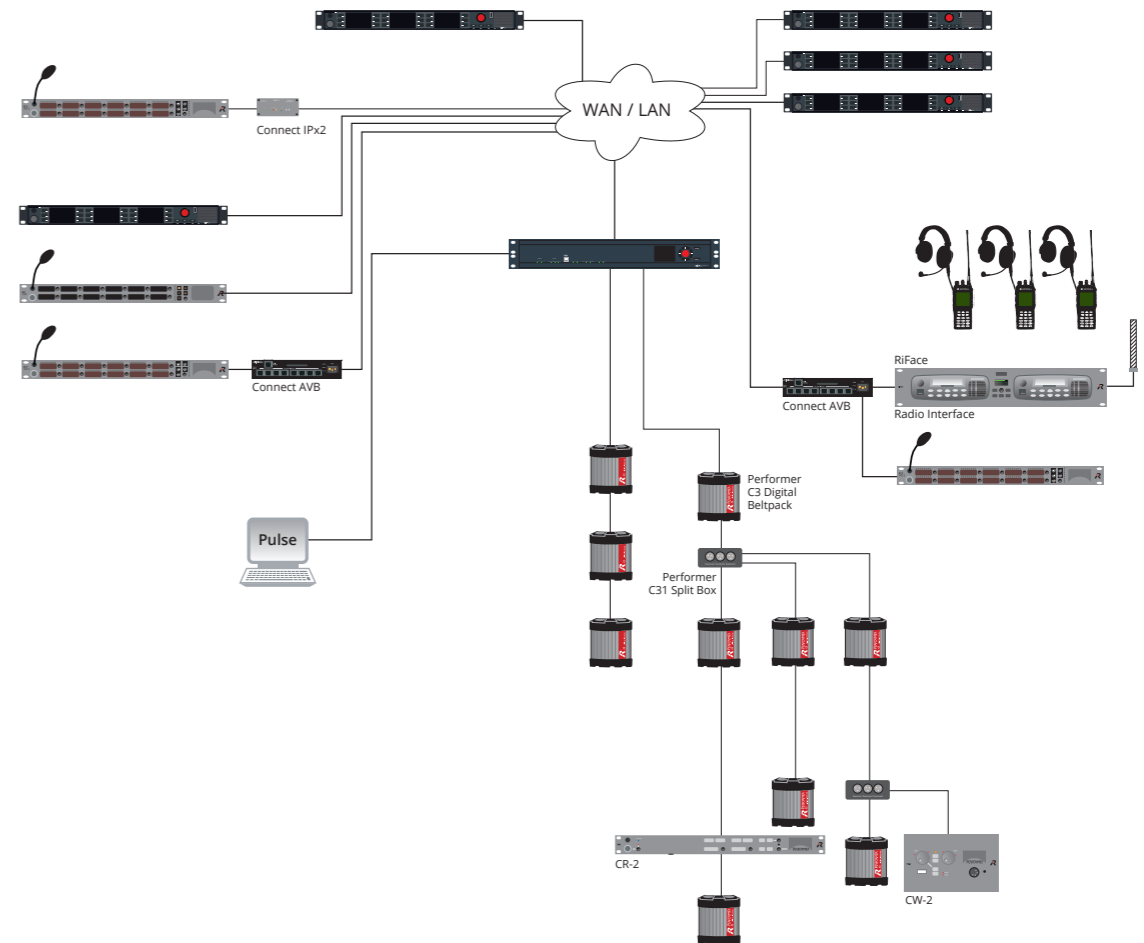
Riedel's Pulse is the configuration software for the Tango TNG-200 platform. It enables access, setup and control of any aspect and function of the Tango TNG-200 platform and its installed applications, combining intuitive handling features such as drag and drop with 3D views for easy programming.

My first Riedel – Intercom Application

Riedel's "My First Riedel" application for Tango TNG-200 is an asymmetric 40x80 matrix which can be configured via Riedel's Pulse software.

„My First Riedel“ Application for TNG-200

Matrix Size	40 x 80	
Number of Connections via AES67 / AVB	32 Streams to Key Panels converters or other network devices	
Supported Features	Point-to-Point calls Groups Conferences IFBs	
Matrix Functions	Stereo 4 Logics (with basic logic functions)	
Key Functions	4 stackable Functions per Key	Vox
	8 IFBs	4 Room Codes
	Call to Port	Call to IFB
	Call to Conference	Listen to Port
	Reply	Mic Kill
	Route Audio	Switch GPIO
	Call to Group	Sidetone
	Logic Sources	Dial command



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.

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.



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 is 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.



	1000 Series Panel	1100 Series Panel	1200 Series SmartPanel	2300 Series SmartPanel
Features				
Displays	LED (in-key)	High-resolution multi-color OLED (in-key)	High-resolution sunlight readable true color TFT (touchscreen)	High-resolution sunlight readable high-color TFT (touchscreen)
Key Type	Pushbutton (with integrated display)	Pushbutton (with integrated display)	Hybrid lever (lever with integrated rotary encoder)	Pushbutton (with touchscreen)
Individual Volume Control	✓ (rotary for each key)	✓ (rotary for each key)	✓ (integrated rotary for each key)	✓ (touch gesture)
Sidetone Adjustment	✓	✓	✓ (via secondary rotary)	✓
Shift Page (doubling the number of keys)	✓	✓	✓ (Key Banks)	✓
Maximum Characters (per key)	8	8	8 (main title) 16 (subtitle)	8
Icon Support	-	✓	✓	✓
Function Keys	Headset/panel mic, Shift page, Normalization, Options, Beep	Headset/panel mic, Shift page, Configurable F1/F2 keys, Options	Touch-enabled Info Display; Beep, Monitor, Normalize Gain, Copy Reply via simple touch gestures	Headset/panel mic, Mute, Shift page, Menu
Digital Matrix Connection	AES3 (CAT5)	AES3 (CAT5), optional: AES67, AVB, VoIP	AES3, AES67 (CAT5)	AES3, AES67, AVB (CAT5), optional: VoIP
Analog In/Out	2 / 2 (9-pin female D-sub)	2 / 2 (9-pin female D-sub)	2 / 2 (RJ45)	2 / 2 (RJ45)
GPI In/Out	3 / 3 (9-pin female D-sub)	3 / 3 (9-pin female D-sub)	3 / 3 (9-pin female D-sub)	3 / 3 (9-pin female D-sub)
Headset Connections	2 (XLR4, 9-pin female D-sub)	2 (XLR4, 9-pin female D-sub)	2 (XLR4, RJ45)	2 (XLR4, RJ45)
Connectivity	Matrix: BNC, RJ45	Matrix: BNC, RJ45	Matrix: BNC, RJ45 Ethernet: 2x RJ45, 2xSFP	Matrix: BNC, RJ45 Ethernet: 1x RJ45
Loudspeaker	1 (full-range)	1 (full-range)	2 (stereo, full-range)	1 (full-range)
Supported Character Sets	Latin Cyrilic Katakana	Latin Cyrilic Kanji Katakana	Latin Cyrilic Kanji Katakana	Latin Cyrilic Kanji Katakana
Types				
Rack-mount	RCP-1012E/O (12 keys, 1RU 19", depth: 56 mm / 2.2") RCP-1028E/O (28 keys, 2RU 19", depth: 56 mm / 2.2")	RCP-1112 (12 keys, 1RU 19", depth: 80 mm / 3.2") RCP-1128 (28 keys, 2RU 19", depth: 80 mm / 3.2")	RSP-1232HL (32 keys, 2RU 19", depth: 95 mm / 3.7")	RSP-2318 (18 keys, 1RU 19", depth: 79 mm / 3.1")
Expansion	ECP-1016E (16 keys, 1RU 19", depth: 56 mm / 2.2") ECP-1012E-T (12 keys with keypad, 1RU 19", depth: 56 mm / 2.2")	ECP-1116 (16 keys, 1RU 19", depth: 80 mm / 3.2")	Planned	ESP-2324 (24 keys, 1RU 19", depth: 79 mm / 3.1")
Desktop	DCP-1016E/O (16 keys)	DCP-1116 (16 keys)	Planned	DSP-2312 (12 keys)
Commentary		CCP-1116 (16 keys)	Planned	
SmartPanel features				
Touchscreen (multi-touch support)	-	-	✓	✓
Intercom App	-	-	✓	✓
MediorNet Control App	-	-	-	✓
Control Panel App	-	-	✓	-
Audio Monitoring App	-	-	✓	-
Logical Group Colors	-	-	✓	-
Key Banks	-	-	✓	-
Bluetooth	-	-	✓	-
NFC	-	-	✓	-
Light Sensor	-	-	✓	-

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 stand-alone/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.

Riedel Commentary Panel – Features

- » High-quality microphone preamplifier 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
- » Elaborated split-ear operation for commentary headphones: all sources routable
- » Standalone/emergency mode operation
- » Power supply redundancy via DC connector
- » Quick and easy set-up

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.

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.

RSP-2318 panels also come with 18 keys, high-quality stereo audio, multi-lingual character support and individual volume control. Supporting up to 4 expansion panels, the RSP-2318 allows for a high key density of 114 keys in 5RU.

Needless to say, the RSP-2318 SmartPanel provides backwards compatibility and thus can be integrated in any existing Riedel installation, allowing for smooth interoperability between all Riedel intercom systems, such as Artist, Tango, and Performer.



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

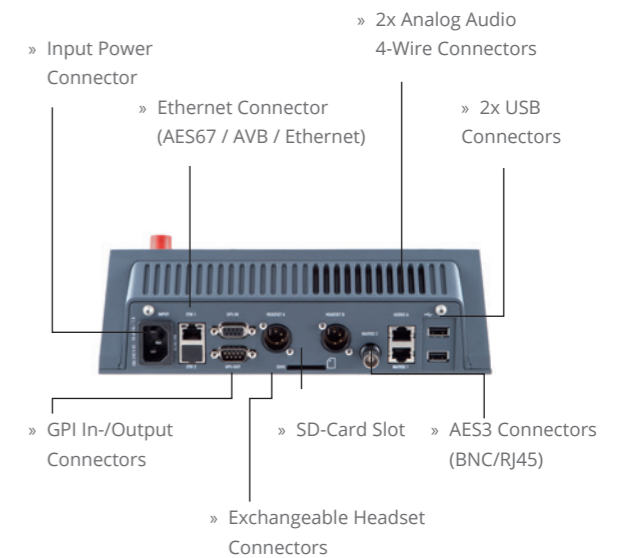
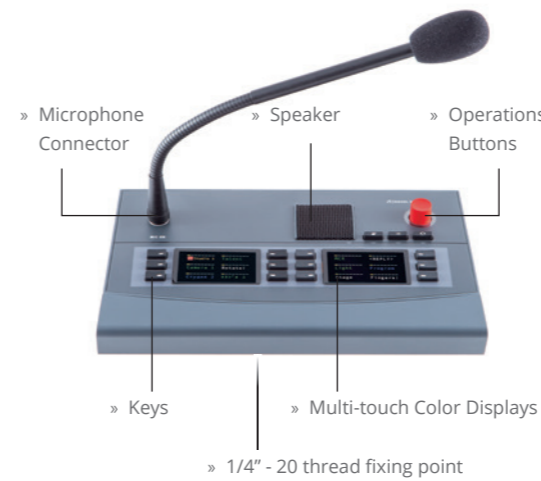
- » Open expandable platform for applications
- » 18 keys
- » 3x high-resolution, sunlight-readable displays
- » Intercom and control panel in one device
- » Individual volume control
- » Intuitive touch-screen UI
- » Integrated power supply

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.

Riedel DSP-2312 – Key Features

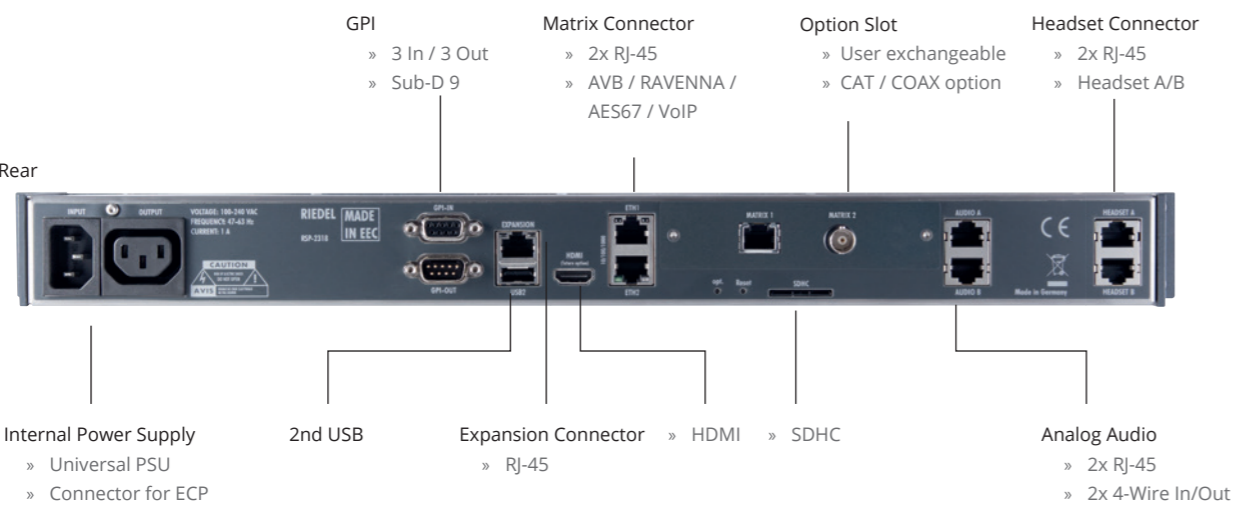
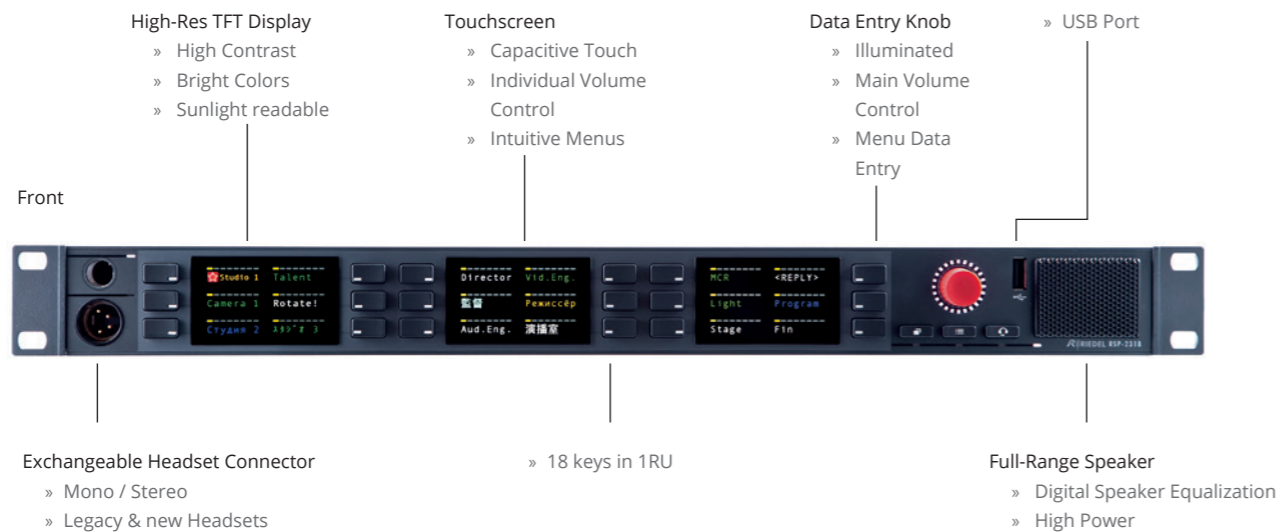
- » Open expandable platform for applications
- » 12 keys
- » 2x high-resolution, sunlight-readable displays
- » Ergonomic design for use in narrow production areas
- » 1/4-20 threads for use with tripods or magic arms for any installation environment
- » Intercom and control panel in one device
- »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



Tech Specs

Environmental Temperature	0 °C ... +45 °C
Supply Voltage	100 ... 240 VAC, 50 / 60 Hz
Power Consumption	15 W / ≤ 30 W (typ. / max.)
Form Factor	Desktop Panel
Dimensions (w×h×d)	262 mm × 84 mm × 179 mm / 10.3" × 3.3" × 7.1"
Weight	1.81 kg / 4.0 lbs

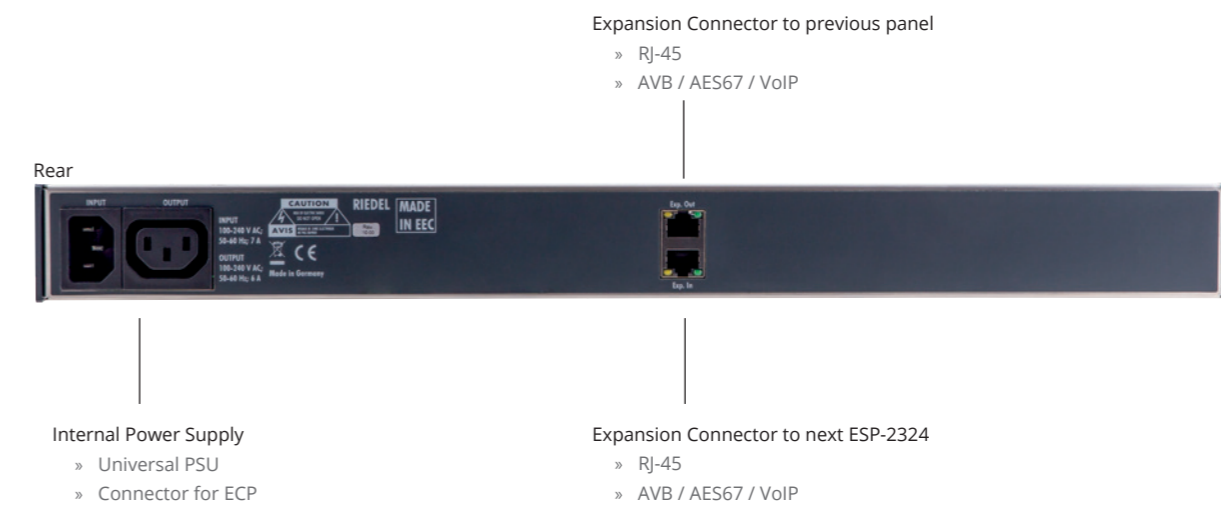
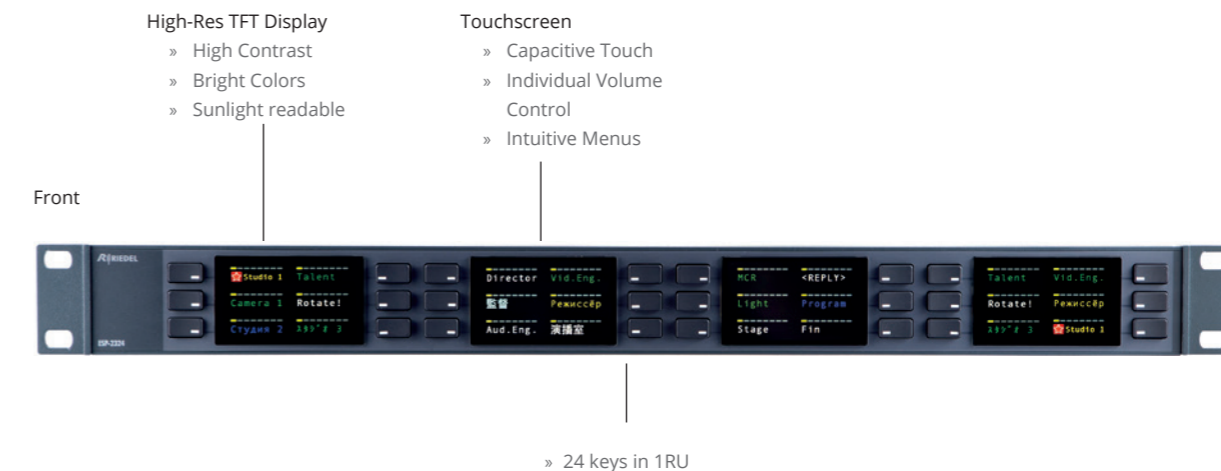
RSP-2318



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" × 3.1" × 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" × 3.1" × 1.7"
Weight	1.4 kg / 3.1 lbs

1200 Series SmartPanel

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 multi-touchscreen 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/Mute" 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

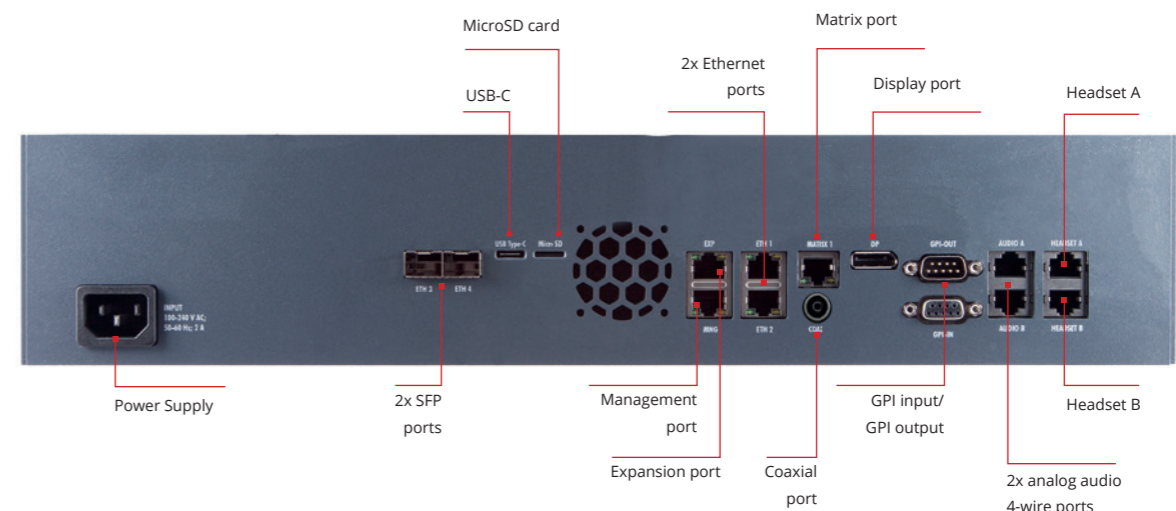
With the new Control Panel App, third-party control, monitoring, and automation systems can be adapted to the RSP-1232HL's easy-to-use and highly intuitive user interface. Its feature set is surprisingly simple but incredibly powerful. Users can trigger actions in third party systems with the panel's 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.

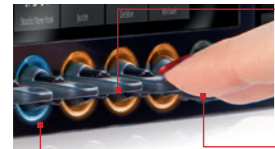
Audio Monitoring App

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 also be indicated within the panel's info display.



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 colors

Full color, high-resolution, sunlight readable touch screen



Reactive multi-touch display

Icon support

LED color rings

Best-in-class readability for labeling/signalling

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)



Create one page with all relevant keys for your morning show production



Quickly change to all relevant keys for your evening show production with just one tap.
Users can still see status messages (open mics, incoming calls, and other) from key banks which are currently not visible

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



Assign group colors to the LED rings or on the key labels

Control Panel App

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



Trigger actions in 3rd party control, monitoring and automation systems

Get visual feedback on configuration status and changes

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

Displays	3 high-resolution, bright color, sunlight readable TFT displays with multi-touch control (capacitive)
Keys & rotaries	32x software-assignable lever keys 2x rotary encoders
Mic	1x threaded 6.3 mm jack for microphone 1x internal panel microphone
Headset	User-exchangeable headset connector with preinstalled 4-PIN male XLR connector
Speaker	2x full-range, high-quality speakers
USB	USB 2.0 Connector (Standard Type A) max. 1000 mA
NFC	Available
Bluetooth	Available
Light Sensor	Available

Hardware rear elements

Power Connectors	Power input
SFP-Slots	2x slots for SFPs
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/Ethernet)
Expansion Management	Connector for Expansion Panels (RJ45)
Matrix	Connector for panel configuration (separation of audio and management network)
DisplayPort	DisplayPort connector
GPI-Out	3x Output max. 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 Headset A identical to front connector signal

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	✓
Multitouch Displays	✓
AES3	✓
AES67	✓
GPI (In/Out)	3/3
Audio I/O A	✓
Audio I/O B	✓
Headset A	✓
Headset B	✓
Expansion Panels	✓
Key Banks	✓
Panel Mic, 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.

	2300 Series			1200 Series
	BASIC	PLUS	PRO	PRO
Intercom Keys	12	12	12	32
Individual Volume Control	✓	✓	✓	✓
Multi-touch Displays	✓	✓	✓	✓
AVB	✓	✓	✓	-
AES67	✓	✓	✓	✓
GPI (In/Out)	-/-	3/3	3/3	3/3
Audio I/O A	-	✓	✓	✓
Audio I/O B	-	-	✓	✓
Headset A	✓	✓	✓	✓
Headset B	-	✓	✓	✓
Expansion Panels	-	✓	✓	✓
Shift Page	✓	✓	✓	✓
Panel Mic, Panel Speaker	✓	✓	✓	✓
Flexible Upgrades	✓	✓	✓	✓
Key Banks	-	-	-	✓
Logical Group Colors	-	-	-	✓

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.

		1200 Series
Controls	Keys	16
	Lever key	128
	Rotary	✓
Functionalities	Touchscreen	✓
	Text	✓
	LED rings	✓
	Icons	✓
	Multi-vendor support	✓

MediorNet Control App

2300 Series SmartPanels 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.

	2300 Series	
	RSP-2318	DSP-2312
Control Keys	18	12
Running on ESPs	✓	-
Shift Page	✓	✓
Audio I/O	34/34	34/34
Video I/O	34/34	34/34
GPI I/O	34/34	34/34
Macros	34	34
Macro depth	100	100
Panels per network running MediorNet Control	25	25
MediorNet 3rd-party IDs	250	250
Panel Mic/Speaker	Owned by Intercom App	Owned by Intercom App
Configuration via browser	✓	✓
Flexible Upgrades	✓	✓

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.

		1200 Series
Audio sources	Monitoring sources	16
	Available sources	128
Functionalities	SMPTE 2110-30 (AES67)	✓
	Individual volume control	✓
	Set to unity gain	✓
	Auto-dim on intercom call	✓
	Import / export configuration	✓

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 tomorrows production and delivery environments.

About SMPTE-2110

SMPTE 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.

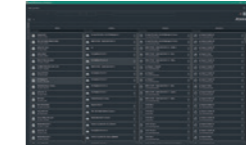
About AES67

The Audio Engineering Society published a standard for audio over IP interoperability 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 A/V experience.



NMOS Explorer

The NMOS Explorer is a tool to discover, manage and connect IP Media Devices following AMWA IS-04 and IS-05. It allows IS-04 discovery in Registered Mode (default) and Peer to Peer discovery, when no Registry is available. IS-05 parameters can be read and set individually, so that it can also be used to connect senders and receivers. By offering an Import/Export SDP Option, the Explorer can also be used to connect devices that do not support IS-04/05, but can exchange SDP objects.



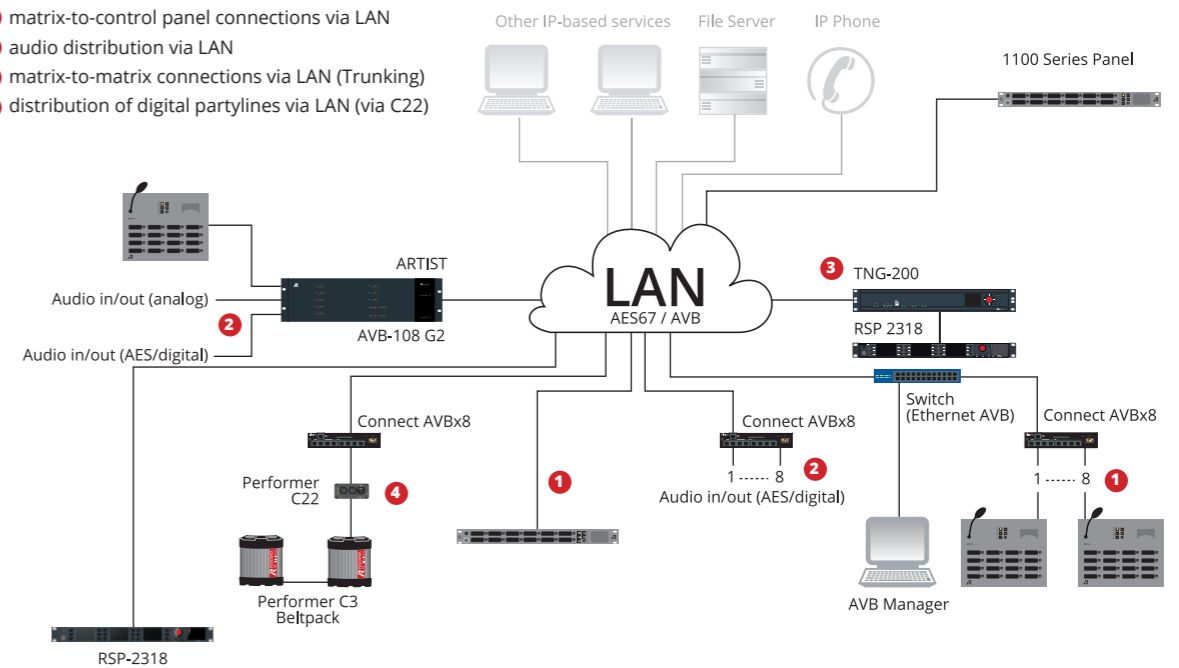
AVB Manager

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

There are four major applications for AVB in intercom:

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



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.



SMART
RACK



SMART
RACK



SMART
RACK

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
For more details about Smart Rack please refer to the "Fiber Accessories" section.

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

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 keypanel, 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 beltpacks 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 beltpacks can be quickly and easily set up and configured via a web browser, without the need for an Artist Intercom matrix since audio mixing and all control functions are handled by the antennas. Antennas may be positioned in a redundant ring or daisy chain topology, or deployed individually using CAT5 cabling. With the optional EPS-1005 power supply, up to five antennas can be powered and adding multiple PSUs creates a redundant power ring. Finally, an NSA-002A stream adapter is used to interface Bolero with other intercom systems via analog 4-wire and provide GPIOs for convenient external device handling.

Similarly, Bolero **Standalone 2110 (AES67)** lets users establish IP-based Bolero networks without the need for an Artist matrix. The antennas are distributed over a SMPTE 2110-30 (AES67) IP network and connected via AES67 PoE switches. As in Standalone Link deployments, audio mixing and control functions are handled by the antennas and 100 beltpacks 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 beltpacks per antenna for the same radio bandwidth as other DECT-based systems. The Riedel-exclusive ADR technology combines a unique receiver design with multiple diversity elements specifically designed to reduce sensitivity to multipath reflections, making Bolero useable in challenging RF environments where other systems have great difficulty.

The beltpack 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 beltpack can be used without a headset like a walkie-talkie radio utilizing an integrated mic and speaker. Bolero beltpacks support Bluetooth, allowing either a Bluetooth headset or a Smartphone to be connected. When a Smartphone is connected, the beltpack can act like a car’s “hands free” setup so the user can receive calls on their phone and talk and listen via their beltpack headset. Users can also inject phone calls directly into the intercom channels, providing new levels of workflow flexibility.

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

BOLERO – Key Benefits

- » Up to 10 beltpacks per antenna
- » Up to 250 beltpacks per Bolero Net
- » Best-in-class voice clarity
- » “Touch&Go” beltpack registration
- » 6-channel beltpack plus dedicated REPLY button
- » Built-in microphone and speaker for Walkie-Talkie mode
- » Smartphone integration via Bluetooth
- » Ergonomic, robust beltpack design
- » Sunlight-readable display with Gorilla Glass™
- » Decentralized AES67 IP networked antennas
- » Seamless integration into Riedel’s Artist intercom matrix



reddot award 2019 winner

Riedel-exclusive ADR technology overcomes multipath issues

Modern, high-clarity voice codec increases beltpack to antenna density

Fully integrated with Artist for point-to-point comms and ease of use

Next generation, digital, global license free, 1.9GHz DECT band

Integrated Bluetooth technology for wireless headsets or phone connection

IP-65 environmental sealing

Bottle opener – just in case!

Up to six full-duplex keys plus convenient REPLY button to last caller

Integrated mic and speaker for headset-free operation

Can be used as a beltpack, a portable desktop keypanel, or walkie-talkie

NFC means no registration headaches! Touch the beltpack to the antenna and GO!

Tough, ergonomic beltpack built to survive



BOLERO Accessories



Meet the growing Bolero Family: color-coded beltpack covers, rack mount kits and protection kits further enhance Bolero systems.



BL-BPK-COVER



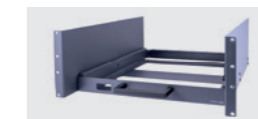
BL-EPS-1005-00



BL-CHG-1005-R



SPK-001 Stagebox Protection Kit



BL-RMK-1002 -01

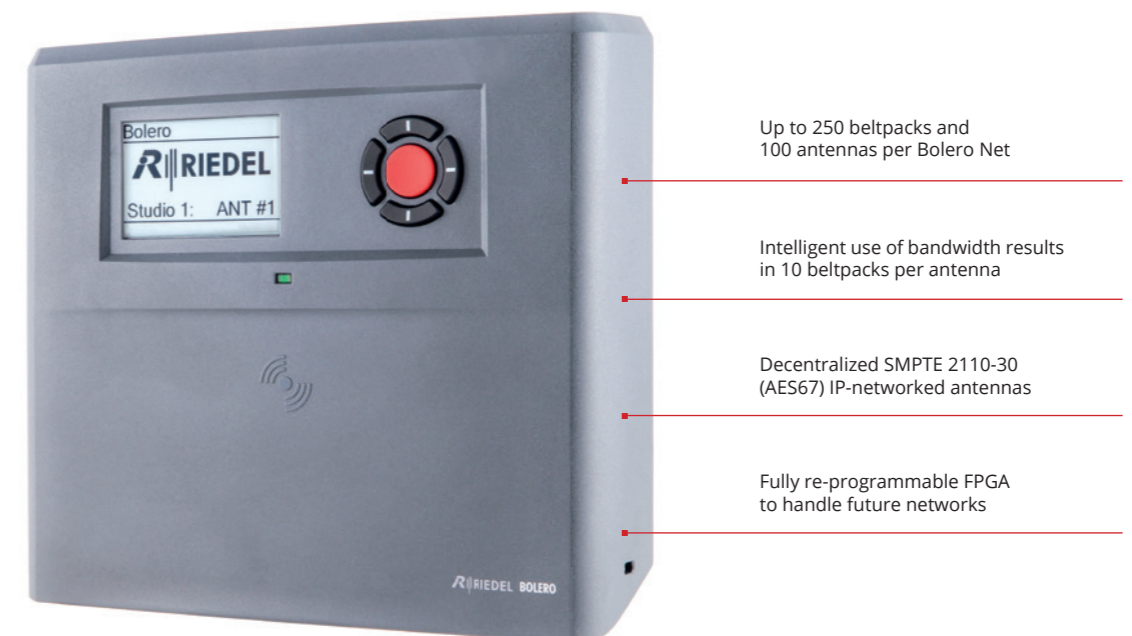


RMK-001 Stagebox Rack Mount Kit

Beltpack	Bolero 6-key beltpack (BL-BPK-1006-19-xx)
Multi-path delay spread protection	Yes, ADR (Advanced DECT Receiver)
Audio bandwidth	200 Hz to 7 KHz (-3dB)
Mode of operation	Full-duplex on all routes
Encryption	AES encryption, 256 bit
Line in	3.5mm jack, 20Hz to 20kHz
Talk controls	4 pushbuttons + reply key + 2 walkie-talkie keys (momentary, latching & auto mode)
Volume / level controls	2x master or slave + menu navigation
Display	High contrast sunlight readable full colour LCD display
Audio prompts	Out of range, Bluetooth connected / disconnected; beltpack registered / deregistered, beltpack unregistered / not registered, beltpack not connected, battery low
No. of full-duplex audio paths	6 with individual level control
Handheld operation	Walkie-talkie mode
Vibrate module	Programmable vibrate indicates incoming calls and other notifications
Internal loudspeaker	Freq. <500Hz to >7kHz 80dB/SPL/0.5W/1m, @ <5% THD.
Remote health monitoring	Battery charge status, via web browser
Battery	Lithium Ion removeable battery pack with user removeable clip
USB charging	USB Type C connector for beltpack charging
Operation time	17 hours typical
Headset connector	4-pin male XLR, user replaceable
Microphone type	Electret (ca. 5V bias voltage) or dynamic, user selectable or automatic
Side-tone and microphone gain	Individually adjustable for each beltpack & via remote control
Bluetooth	v4.1 (hands free profile & HSP headset profile) & A2DP advanced audio distribution profile
Bluetooth phone call mix into intercom	Yes
Lanyard anchor points	Yes
Environmental	IP-65 environmental sealing; protected against dust ingress and water spray from all angles (with XLR connector plugged in)
Storage temperature	-20 to 50 °C long term; -20 to 60 °C short term
Operational temperature	-10 to 55°C
Humidity	0-90%, non-condensing Ta=40°C
Dimensions	(W) 86mm, (D) 48mm, (H) 130mm (W) 3.4", (D) 1.9", (H) 5.1"
Weight	420g inc. battery and clip

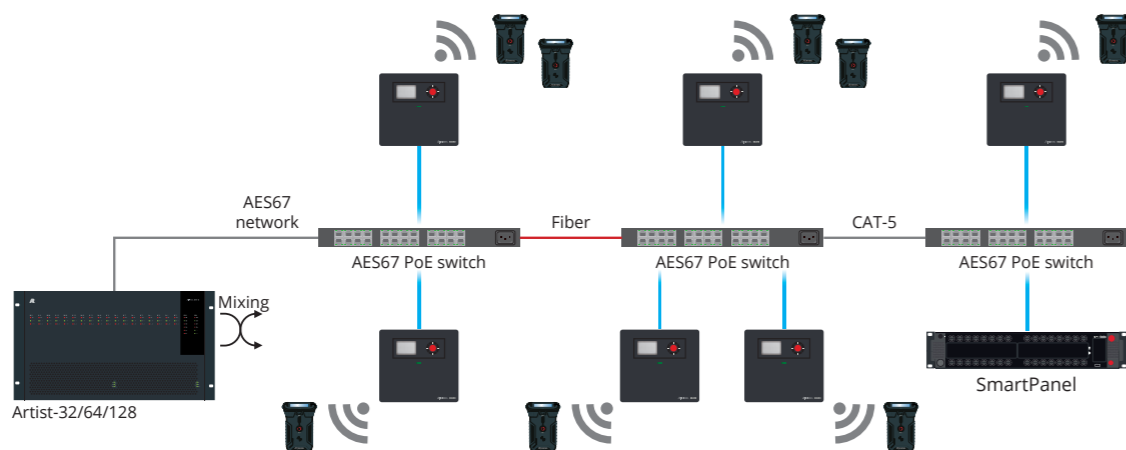
Battery Charger	5-bay drop in charger (BL-CHG-1005-R)
No of beltpack slots	5
Beltpack charge time	up to 3 hours
Charge status LEDs	1 per charge slot
Beltpack display	% charged, charging time remaining, temperature, battery health
USB Type A +C	For firmware update and charging a Phone or beltpack via cable
Power socket	1x IEC
Power supply	100-230VAC / 50 - 60 Hz
Mounting	2x wall mounts or 19" rack drawer via optional accessory kit

Antenna	Bolero Active Antenna (BL-ANT-1010-19x)
No of beltpacks per antenna	10
Radio frequency range	1.880 - 1.930GHz (region dependent)
Antenna radio coverage (diameter)	Indoor (structure dependent): ~200-400m; outdoor (free line of sight): ~300-500m
Beltpack to antenna range	Indoor (structure dependent): ~100-200m; outdoor (free line of sight): ~150-250m
Beltpack registration	1 touch NFC, over the air, beltpack to antenna and beltpack to beltpack (local NFC) registration
Network connection	SMPTE 2110 (AES67) IP or direct cable connection in standalone mode
Display type	High contrast E-ink display
Programmable transmission power	yes
Support of Layer 3 networks	yes
TTL Settings	Adjustable multicast TTL (1 to 255 / default 16)
DECT Master Priority	Configurable in WebUI
Network monitoring on antenna display	IP / daisy chain / closed ring
Power supply	PoE+ (802.3at, type 2, class 4, 15-30W) or 10 to 57 VDC
Power consumption	17W
Mounting points	Mic stand threaded socket 5/8" & 3/8" inside, spigot adapter with wing screw lock, Kensington lock hole, & screw hole for a safety wire mounting
Environmental	IP-53 environmental sealing; protected against limited dust ingress and water falling as a spray at an angle of up to 60° from vertical
Operational temperature	-10 to 45 °C
Humidity	0-90%, non-condensing Ta=40 °C
Dimensions	210mm (W) x 66mm (D) x 190mm (H); 8.3" (W) x 2.6" (D) x 7.5" (H)
Weight	1380g



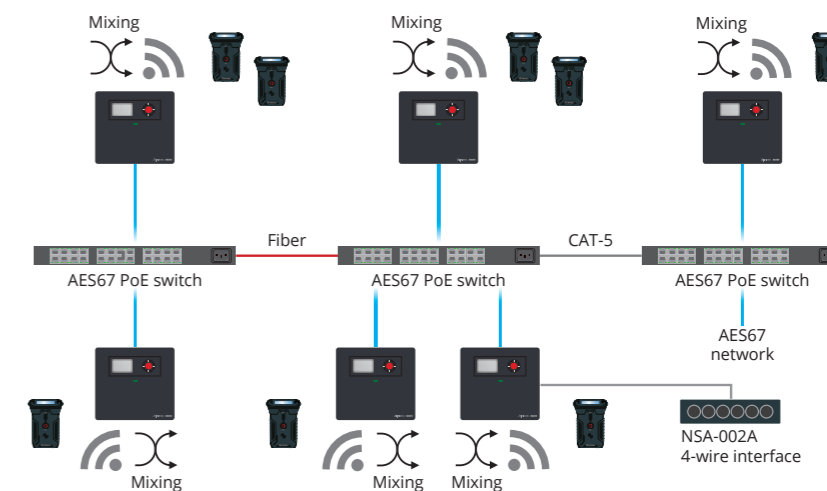
BOLERO Integrated

- » 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, MAD1, 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



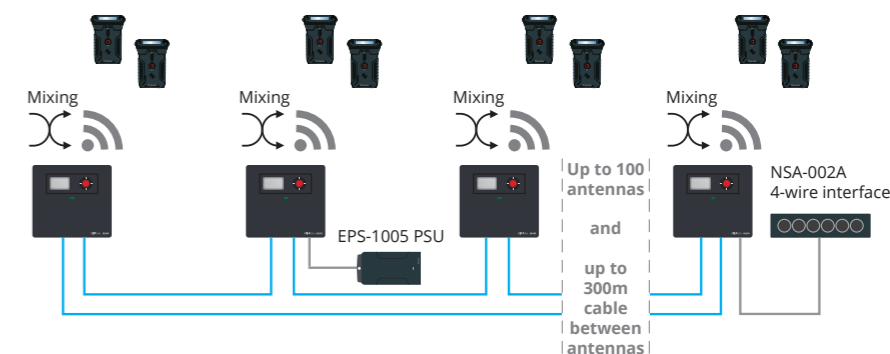
BOLERO Standalone 2110 (AES67)

- » 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



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



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-Kill
- » 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"/1RU 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 UI 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 partylines, Call and GPI, IFB 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 Station 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 C44plus

System Interface

The C44plus System Interface allows for seamless integration of digital partylines in matrix intercom environments. The 19"/1RU 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 Riedel's audio assignment 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 C31 Split Box

The C31 Split Box splits one signal input on XLR3 onto three XLR3 outputs. The device can be powered by the partyline or with an external power supply for extra long cable runs.



Performer CI31 call Indicator

The CI31 Call Indicator combines a C31 Split Box with a selectable high volume buzzer and a large flashing lamp to provide visual and/or audible indication of a "call."



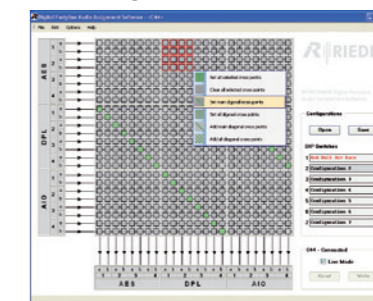
Performer C22

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 seamless integration of digital partylines with matrix intercom systems. In addition it can also be used for any application where you would like to route the audio of digital partyline intercoms via an AES digital audio infrastructure such as MediorNet, Artist or any 3rd party AES audio router solution. The Performer C22 can power daisy-chains of up to nine beltpacks, split-boxes or desktop speaker stations per line.

Performer AAS

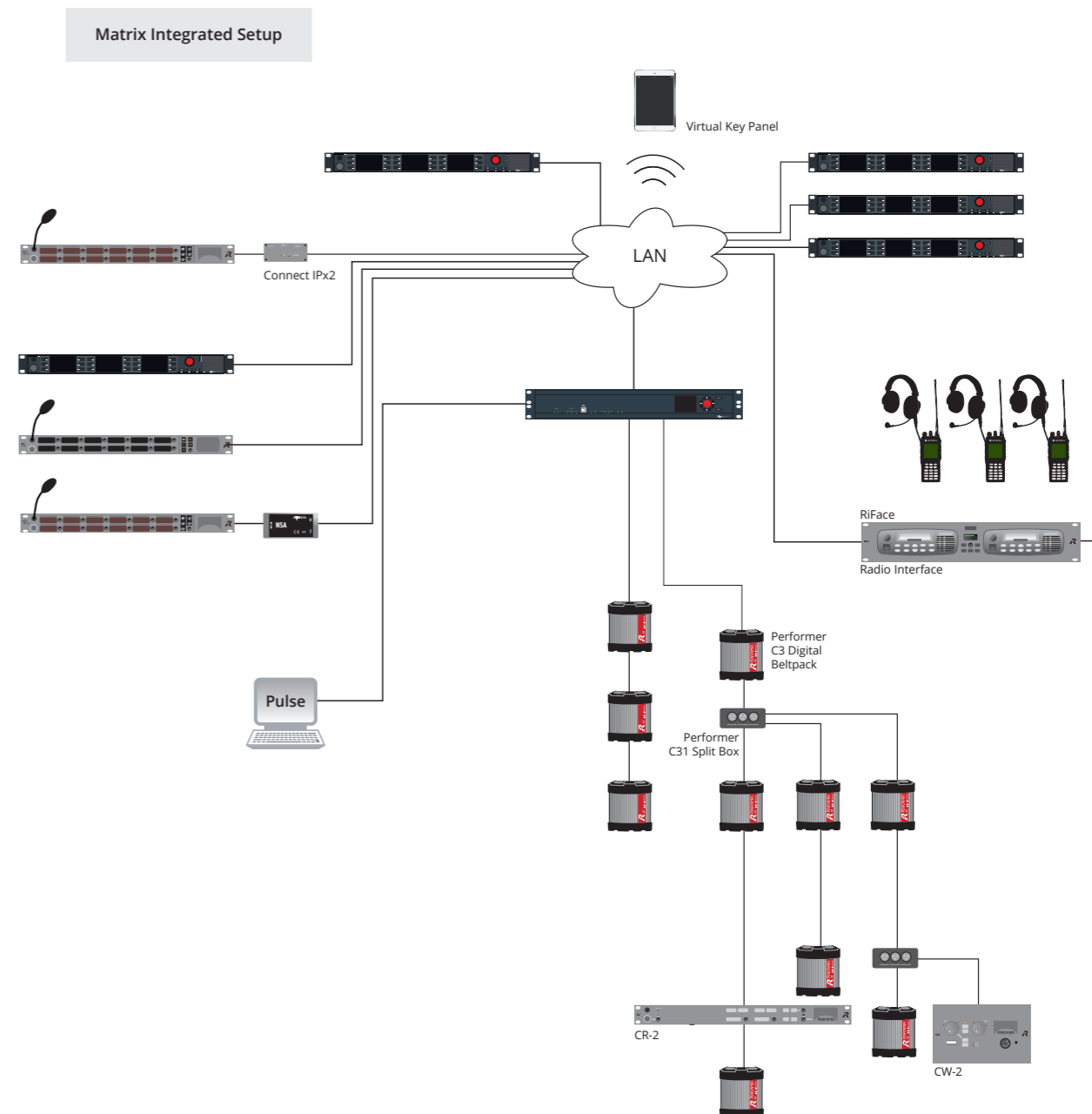
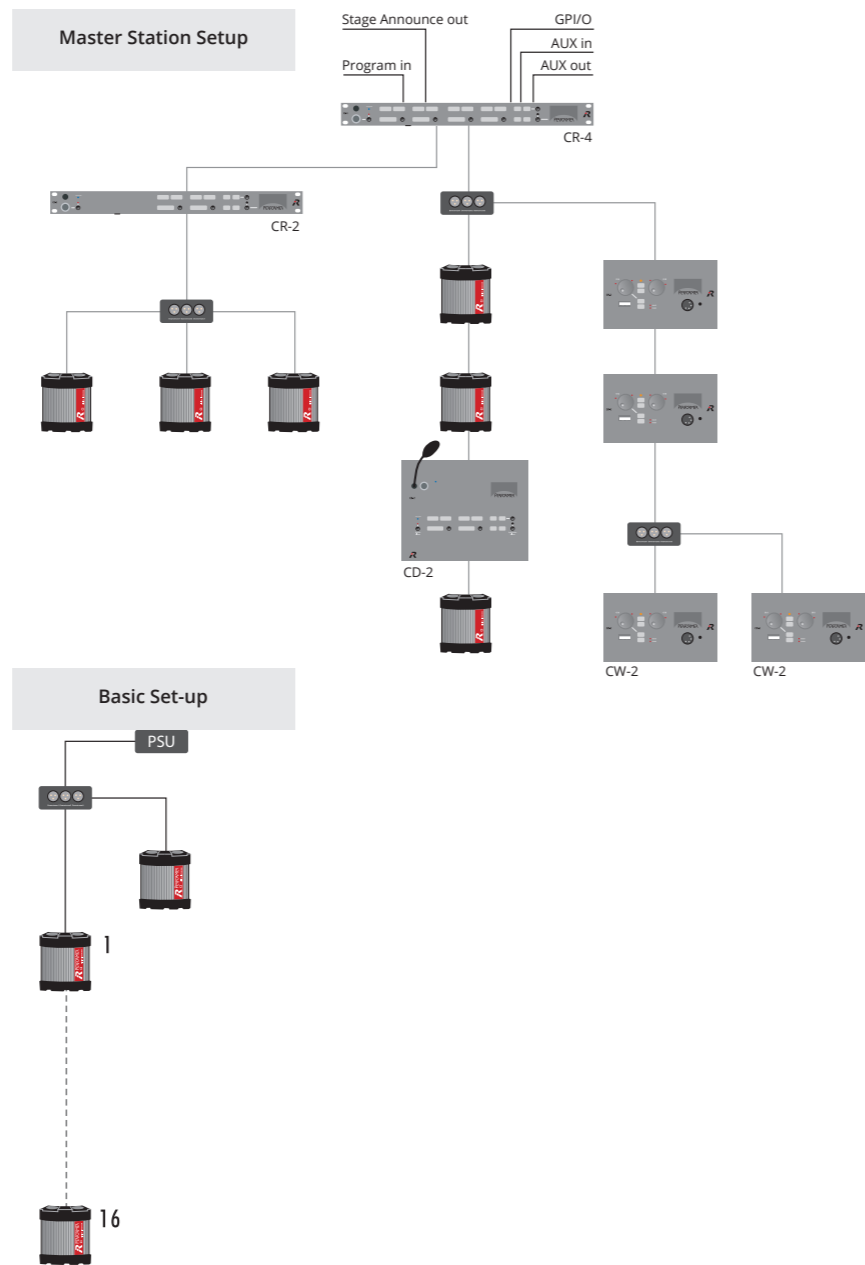
Audio Assignment Software



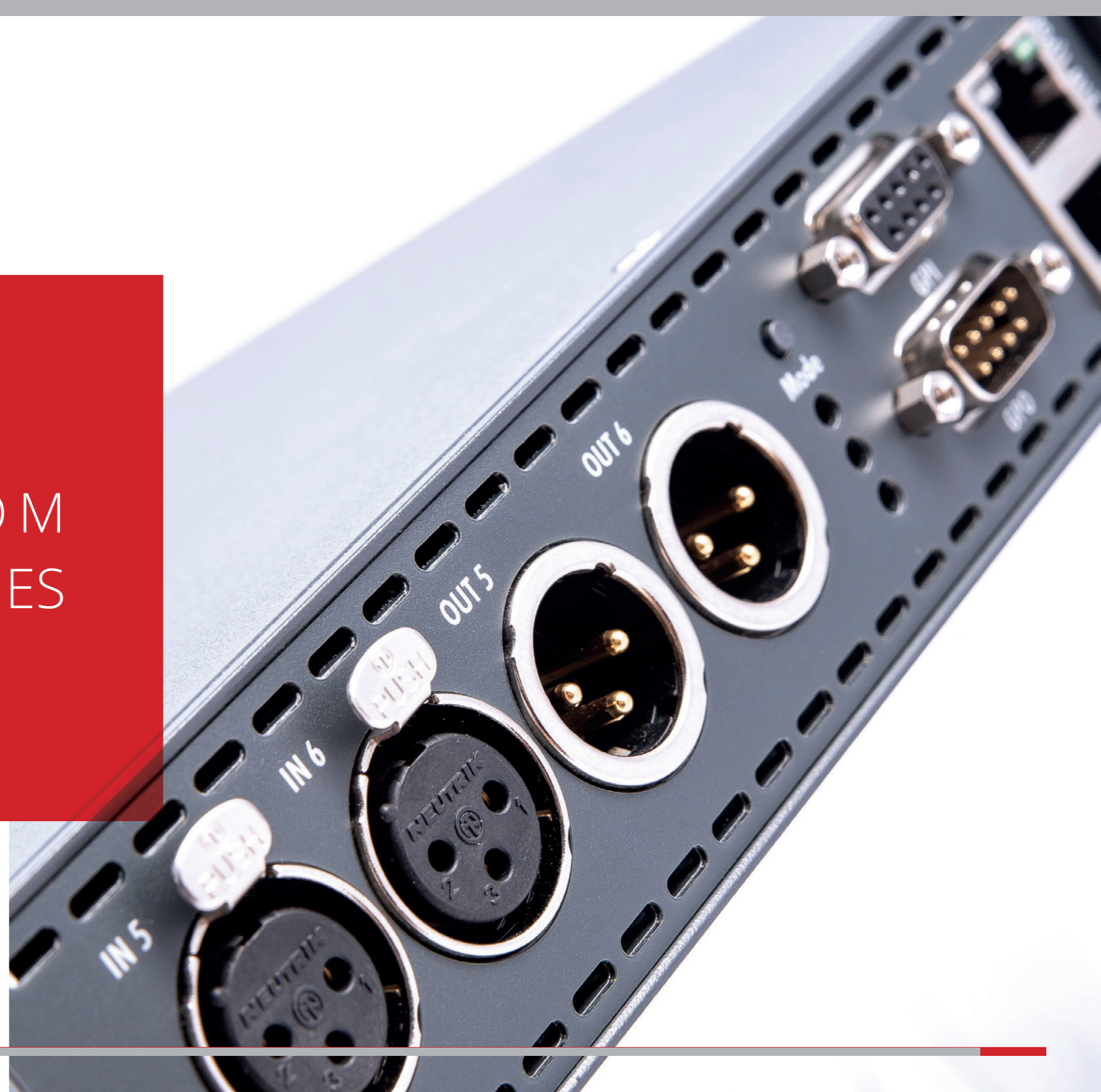
The Performer Audio Assignment Software is an intuitive tool for editing the settings of the eight pre-programmed configurations of the Performer C44plus System Interface. This enables the C44plus to serve as the heart of a small stand-alone intercom solution.

The Performer series is a flexible and powerful system to meet your specific communications needs. The setup of distributed partylines can be easily adjusted to meet any requirement and finally provides digital audio quality on a beltpack.

Whether used in standalone partyline 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.



INTERCOM
ACCESSORIES



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/ S₀ 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 ¼ 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 ports to connect up to eight Riedel key panels in one or two-channel mode to the Artist and Tango matrices via Ethernet-based LANs.

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 24x24 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 MediorNet, Artist or any 3rd party AES audio router solution.

Radio Interfacing



RiFace G2 – Universal Radio Interface

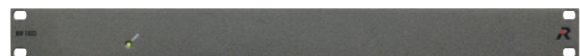
The RiFace G2 is a universal radio interface to connect wired communication systems with walkie-talkie style radio systems. The 19"/2RU interface includes one or two two-way radios (user provided), processor logic to control the radios, DSP-presets as well as circuitry to adjust the levels of the various 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.

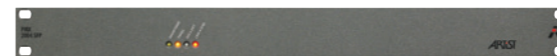
GPI Interfacing



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

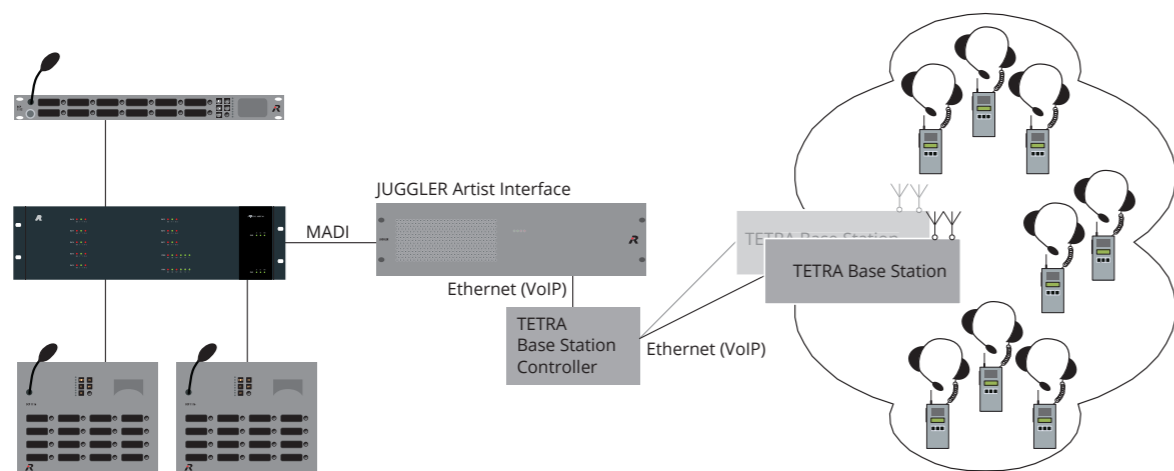
The CPX-AVB option card offers an Ethernet interface, that allows reliable real-time connectivity to Riedel digital intercom matrices via AVB for all 1100-Series RCP panels.



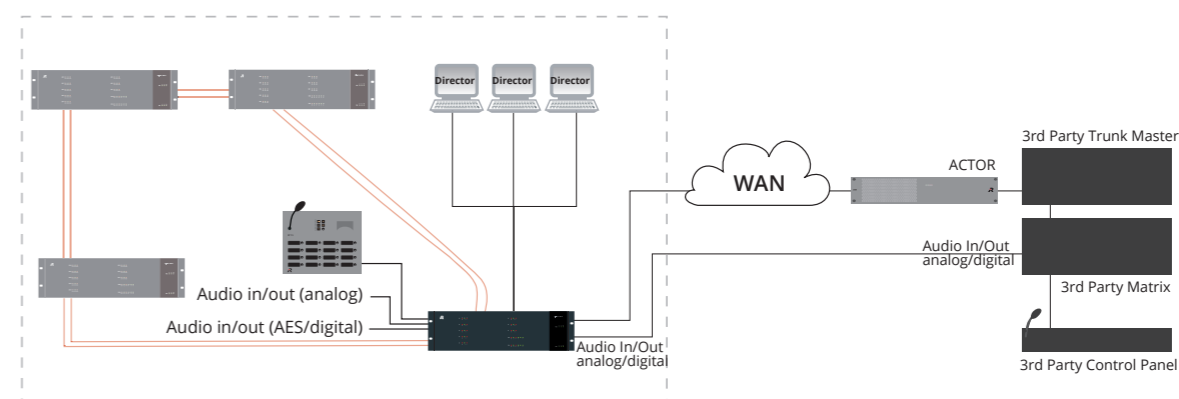
SPX-AES

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

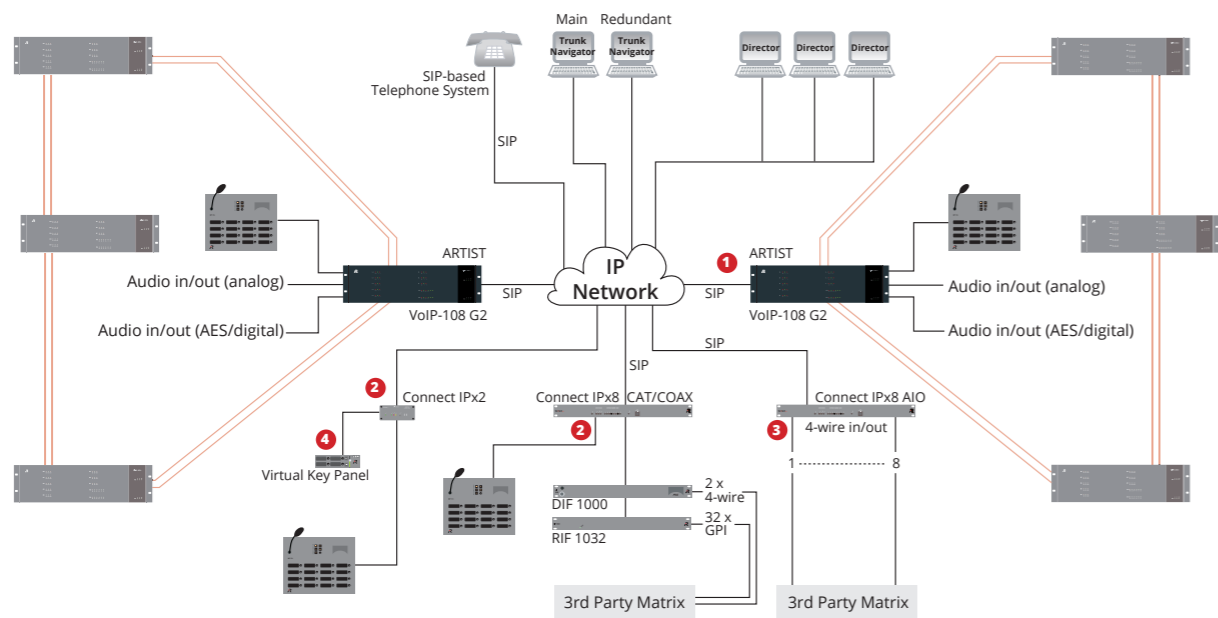


ACTOR – System Overview



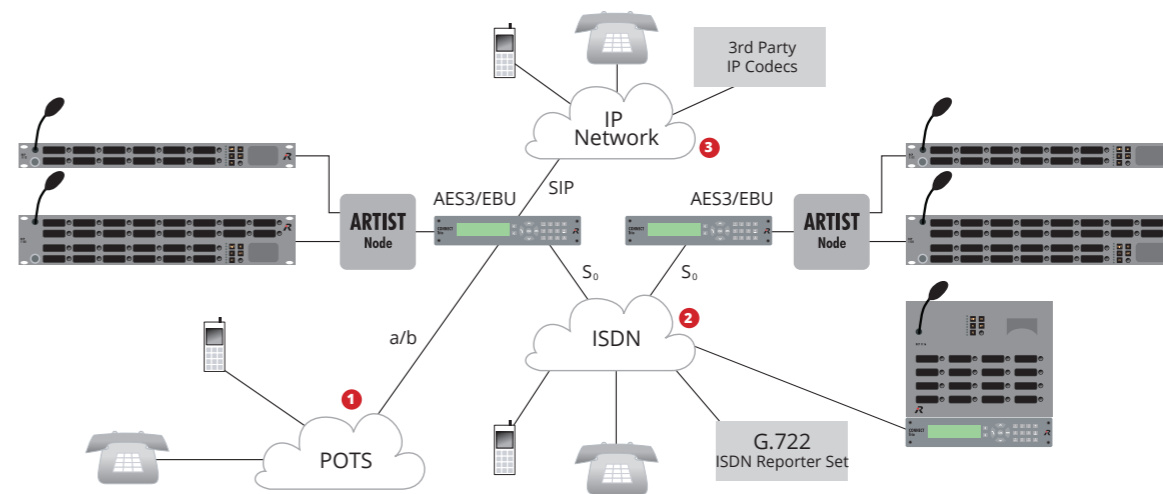
CONNECT IPx2 / IPx8 – System Overview

- Applications:**
- 1 multi-port matrix-to-matrix connections (Trunking)
 - 2 matrix-to-control panel connections
 - 3 multi-channel distribution of audio lines
 - 4 matrix-to-virtual control panel connections



CONNECT TRIO – System Overview

- Applications:**
- 1 dual analog POTS hybrid
 - 2 ISDN BRI interface (2x ISDN B-channel)
 - 3 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 270° 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.

Coolmax® is a registered trademark of INVISTA



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 270° rotation of the microphone boom allows the microphone to be worn on either left or right side.

RUN-E1 L/R – Professional In-Ear Headset

Optimized for use with Riedel's award-winning Bolero wireless intercom system, the RUN-E1L/R (XLR4F) 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.



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 270° and allows the microphone to be worn either on the left-hand or right-hand side.

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 PTT versions are available on request.

Specifications

AIR Headset

Headphone	AIR (D1/D2)	AIR (E1/E2)
Frequency response	100 Hz - 18 kHz	100 Hz - 18 kHz
Impedance (XLR4F version)	150 Ω 1 mW/1 kHz	150 Ω 1 mW/1 kHz
Characteristic SPL	91 dB 1 mW/1 kHz	91 dB 1 mW/1 kHz

Microphone

Transducer type	NC Dynamic	NC Electret
Polar pattern	Hypercardioid	Bi-Directional
Frequency response	150 Hz - 10 kHz	150 Hz - 15 kHz
Nominal impedance	200 Ω	>1600 Ω
Supply power	---	4.5 V 400 µA

PRO Headset

Headphone	PRO (D1/D2)	PRO (E1/E2)
Frequency response	10 Hz - 30 kHz	10 Hz - 30 kHz
Impedance (XLR4F version)	250 Ω	250 Ω
Characteristic SPL	100 dB at 1 mW / 1 kHz	100 dB at 1 mW / 1 kHz

Microphone

Transducer type	Dynamic	Condenser (back-electret)
Polar pattern	Hypercardioid	Omnidirectional
Frequency response	40 Hz - 12 kHz	20 Hz - 18 kHz
Nominal impedance	200 Ω	680 Ω
Supply power	-	4.5 V 3.5 mA

MAX Headset

Noise Attenuation

Frequency / Hz	125	250	500	1,000	2,000	4,000	8,000
Attenuation (EN 24869-1) / dB	14	19	26	31	28	34	34

Headphone	MAX (D2)	MAX (E2)
Frequency response	80 Hz - 20 kHz	80 Hz - 20 kHz
Impedance (XLR4F version)	300 Ω	300 Ω
Characteristic SPL	94 dB at 1 mW / 1 kHz	94 dB at 1 mW / 1 kHz

Microphone

Transducer type	Dynamic	Back electret
Polar pattern	Hypercardioid	Bidirectional noise cancelling, pressure gradient type
Frequency response	40 Hz - 12 kHz	150 Hz - 5 kHz
Nominal impedance	200 Ω	2.2 kΩ
Supply power	---	4.5 V 170 µA

RUN Headset

Headphone	Microphone
Frequency response	200 Hz - 5 kHz
Impedance	780/1450 Ω at 500/1000Hz
Characteristic SPL	100 dB

Transducer type	Electret
Polar pattern	Omnidirectional
Frequency response	100 Hz - 10 kHz
Nominal impedance	<2.2 Ω
Supply power	1.5 - 10 VDC (3VDC nominal)

Symbols

- 1 2** single headphone / dual headphones
- D E** dynamic microphone / electret microphone
-  omnidirectional condenser microphone for commentary applications
-  excellent noise attenuation for high-noise environments
-  microphone boom rotates 270° allowing for either left or right sided mic/headphone
-  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.





SERVICE
LEVEL
AGREEMENT

Riedel Services

Design & Set-up – Maintenance – Support

We see ourselves as your partner in designing, setting-up, operating, and maintaining your RIEDEL products and solutions in the best possible way.

- Do you work around the globe?
- Do you work around the clock?
- Do you have a big installation?
- Do you have a small installation?

Whatever the case, uptime is crucial for your business.

RIEDEL's worldwide network of partners and offices, along with our headquarters in Wuppertal, offer a variety of services that are tailored to match your needs.

Explore the possibilities in the following pages.

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 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, hardware 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
- » Keep your invest functioning
- » 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.

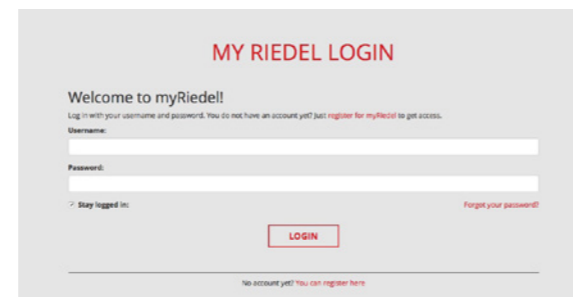
This minimizes the cost for repairs and offers an economical way to maintain asset usability.

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.

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