RIEDEL

Real-Time Networks for Video, Audio & Communications

R|||RIEDEL

Welcome

欢迎

Willkommen

Bienvenue

ようこそ！

Bem-vindos

Добро Пожаловать

Bienvenidos

With almost 30 years of experience Riedel has grown to become the leading provider of high-profile solutions for broadcast, event productions, international games, motorsports and theaters as well as for industrial and governmental applications. Whether it is real-time signal transport, communications or complex rental solutions, we at Riedel strive to not only fulfill your demands, but also to exceed your expectations in terms of service, equipment, expertise and commitment.

As a manufacturer and provider of cutting edge products for signal distribution, communications and data transport, as a supplier to events such as the Olympic Games or the FIFA World Cup and as a solutions provider for leading broadcast networks, theaters or sporting events we offer the knowledge, the confidence and the technology to make your demands become a production reality.

We have the capabilities needed to solve your challenges of today and tomorrow.

Your satisfaction is our goal.

Thomas Riedel

About Riedel Communications

Riedel Communications, founded in 1987, designs, manufactures and distributes innovative real-time networks for video, audio and communications. Riedel's solutions have been embraced at numerous international events including Formula 1 races, World Championships and the Olympic Games. Leading broadcasting companies, prestigious theaters as well as governmental and industrial facilities have also utilized Riedel systems and services.

The company is known for pioneering digital audio matrix systems and fiber-based real-time network technology. Riedel is headquartered in Wuppertal, Germany and employs over 350 people in twelve locations throughout Europe, Australia, Asia and the Americas.

Optimized Business Processes

All of the company's divisions, including R&D, manufacturing, rental, project management, marketing and sales, are consolidated in the "Riedel Technologie Park" – a 55,000 square meter high-tech business park, owned and operated by Riedel. Product development and enhancement benefit directly from the experience of past and current projects. Sales and support offices worldwide provide optimal service to our customers.

Everything from a Single Source

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

A wide range of complementary technologies, such as professional radio systems, RF camera links and solutions for race circuits and race management, further expand Riedel's product range. In close collaboration with its system partners, Riedel's capabilities extend to custom-made solutions and ready-to-use systems. Years of experience in project management and adapting equipment to unique project demands underscore the customer oriented attitude of the company.

Practical Solutions from Practical Experiences

Riedel maintains a large rental operation which enables the company to address the needs of its customers directly. The rental service provides tailored wired and wireless communications solutions, IT infrastructure for events, as well as fiber-based and wireless signal transport and routing systems for sporting, event, theater and industrial applications worldwide.

In addition to renting equipment, Riedel offers extensive support services from project planning to on-site operation. "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 practical 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. The production process is ISO:9001 certified. "In this way we can be assured of meeting the highest demands concerning product quality and strength. The resulting reliability is especially important because our products are in operation 24/7," adds Riedel.

Creating Sustainable Value through Technology Leadership

Riedel designs solutions to meet your highest expectations and demands. That philosophy has been in place since we began nearly 30 years ago. Today, we are focusing on it more than ever, as few industries develop so dynamically as broadcast, media, and entertainment. It is now very clear that IT will be the driving force for the foreseeable future and as technological innovations are change 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 Broadcast-IT.
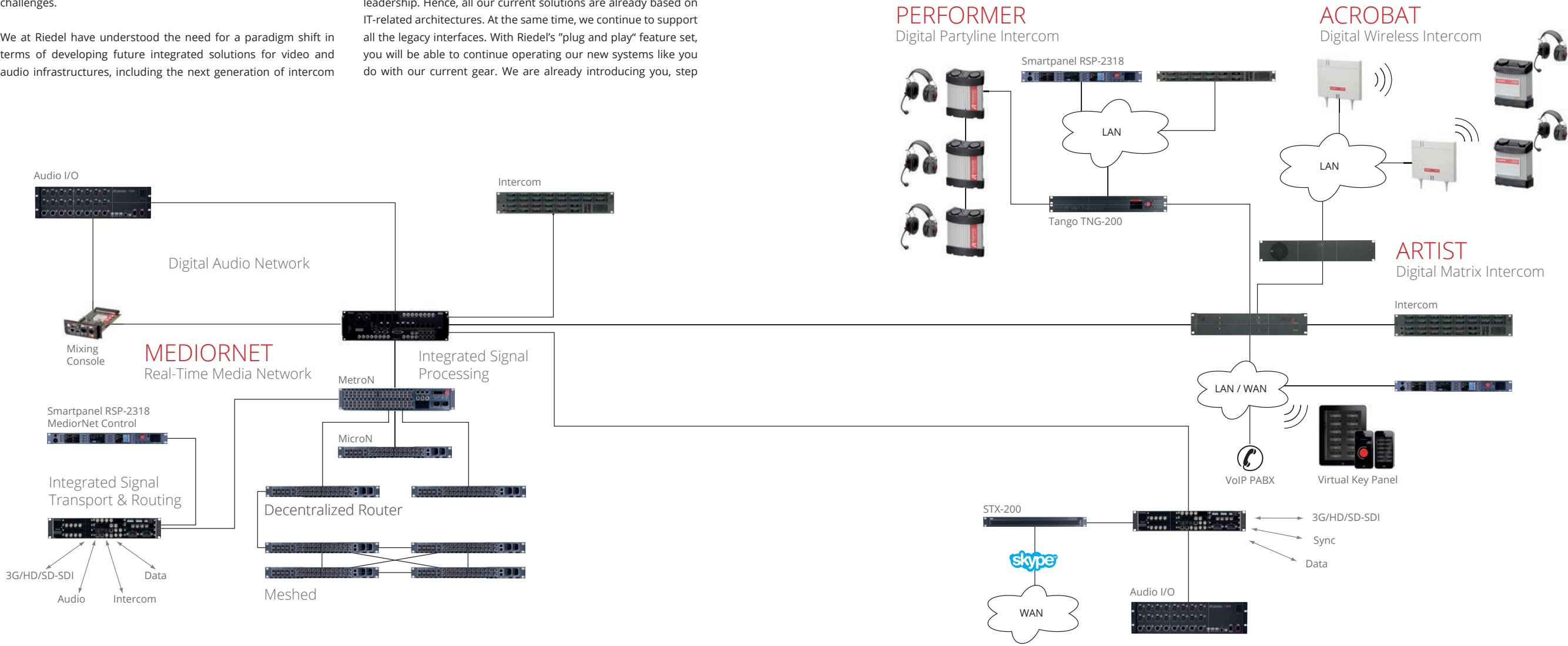
Riedel has always created sustainable value through technological leadership. Hence, all our current solutions are already based on IT-related architectures. At the same time, we continue to support all the legacy interfaces. With Riedel's "plug and play" feature set, you will be able to continue operating our new systems like you do with ou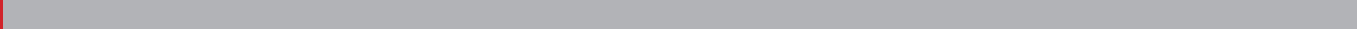r current gear. We are already introducing you, step by step, into this new world of IT-based media infrastructures. These infrastructures and more standardized hardware will help you to reduce operational costs, enhance workflow efficiency, and create more networking opportunities. And this will enable more powerful production and delivery environments.

The question today is not about the standards' availability to offer state-of-the-art broadcast solutions in the future. It is about how flexible systems should be designed to offer you an integrated system approach with maximum connectivity options on your standard of choice while providing seamless workflows and ease of use. By supporting layer 1, 2 (such as AVB), and 3 (such as AES67 for audio or SMPTE 2022 for video) interfaces, we will integrate all three transport layers into one solution to maintain maximum flexibility and to achieve compatibility at the same time.

We are ready for the future. Our goal is to make your investments safe and to support you on your path towards the brave new world of IT-based media infrastructures.

PERFORMER
Digital Partyline Intercom

Smartpanel RSP-2318

LAN

Tango TNG-200

ACROBAT
Digital Wireless Intercom

LAN

ARTIST
Digital Matrix Intercom

Intercom

LAN / WAN

VoIP PABX   Virtual Key Panel

Audio I/O

Intercom

Digital Audio Network

MEDIORNET
Real-Time Media Network

Integrated Signal Processing

Mixing Console

MetroN

MicroN

Smartpanel RSP-2318
MediorNet Control

Integrated Signal Transport & Routing

Decentralized Router

3G/HD/SD-SDI   Data
Audio   Intercom

Meshed

STX-200

skype

WAN

Audio I/O

3G/HD/SD-SDI

Sync

Data

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FIBER ACCESSORIES

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 product line includes MediorNet Modular and MediorNet Compact: MediorNet Modular is a completely modular system that can be tailored to meet the customer's demands and the exact application needs, while MediorNet Compact is a cost-effective all-in-one box solution. Of course, both models are 100% compatible and can be easily networked within the same installation.
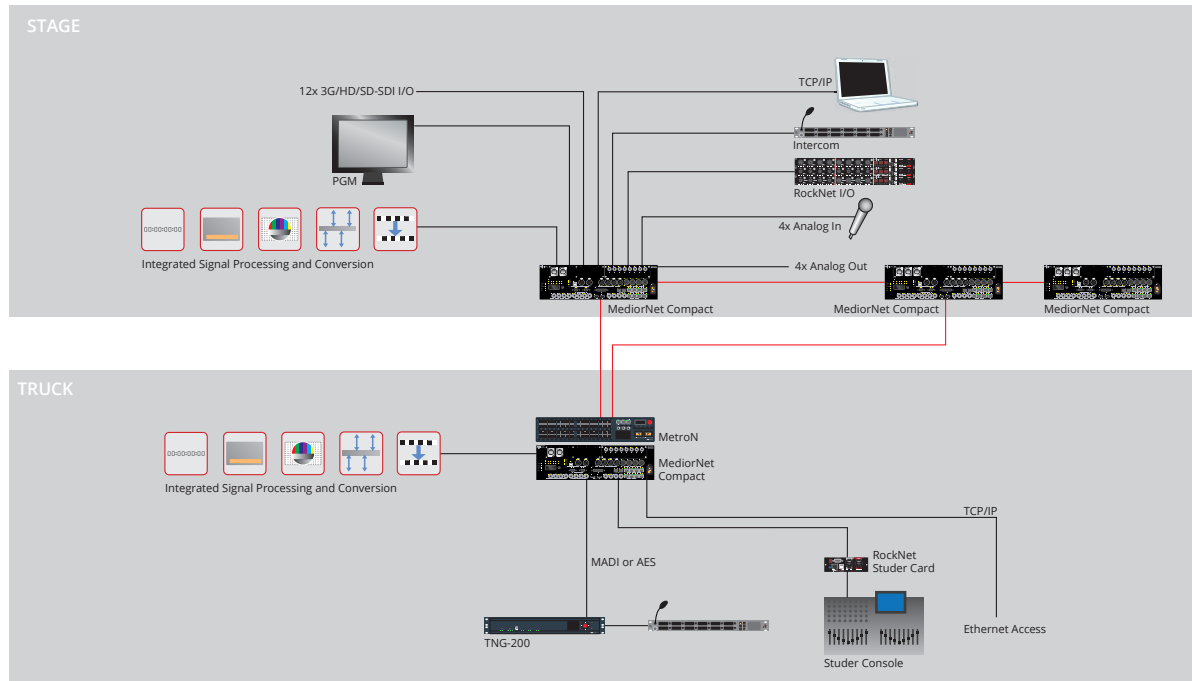
MEDIORNET – Features

- » 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
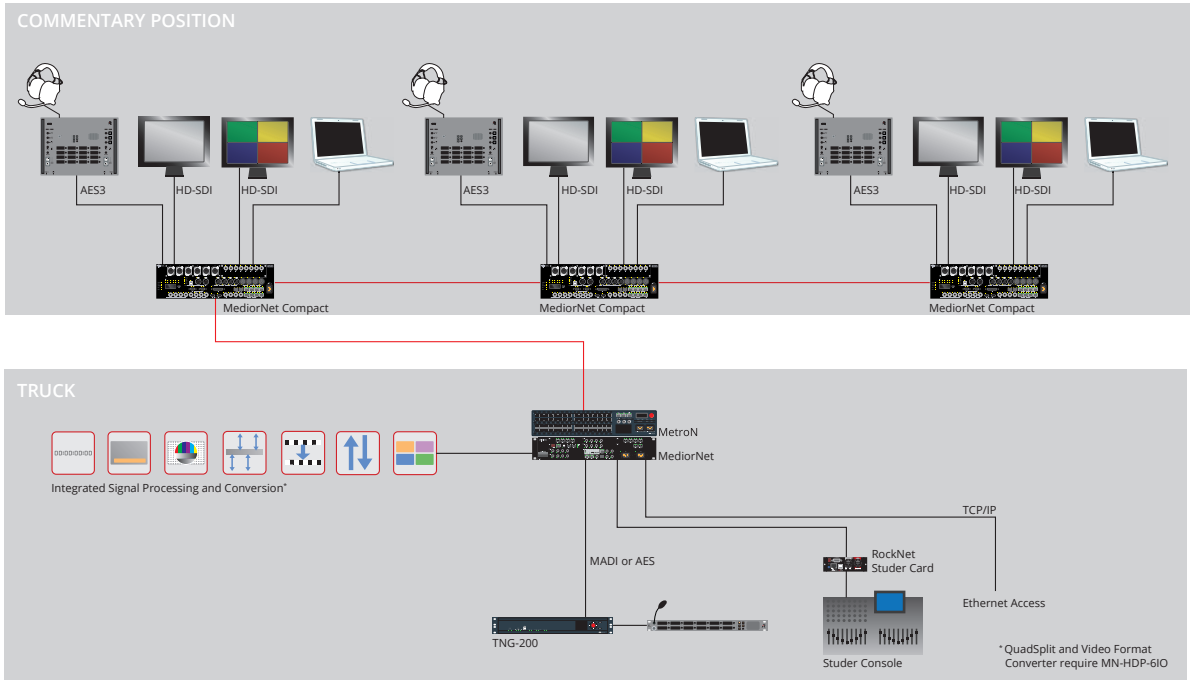- » Future-proof hardware platform

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 adaption to new production needs
- » Integrated signal processing eliminates external glue hardware and again increases the installations flexibility
- » Software-based feature set is expandable and makes MediorNet a secure long-term investment
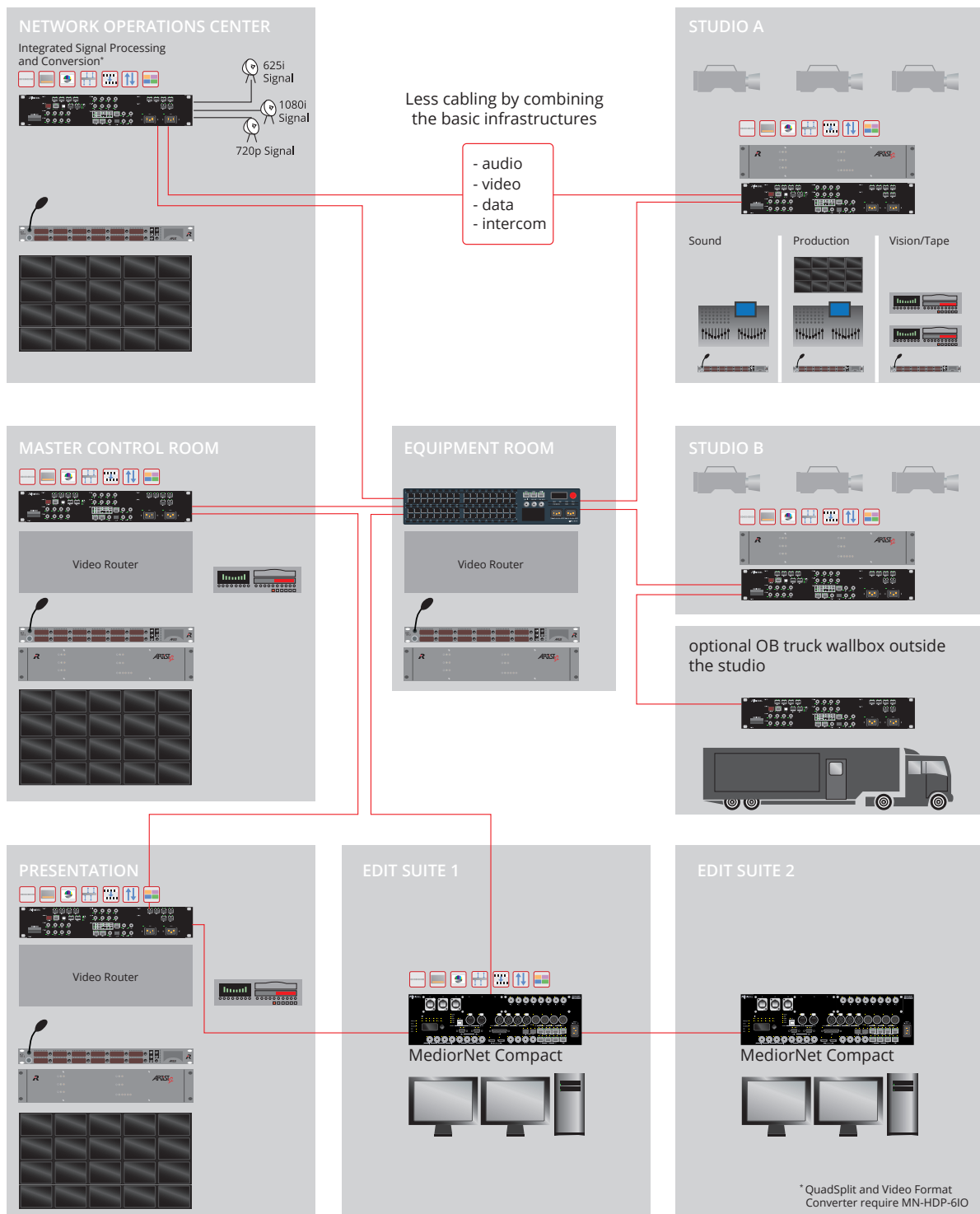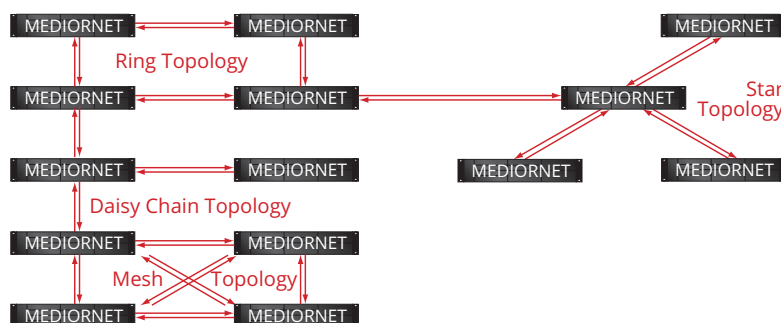- » German engineering and quality manufacturing

Stagebox Application

STAGE

12x 3G/HD/SD-SDI I/O

TCP/IP

PGM

Intercom

RockNet I/O

4x Analog In

Integrated Signal Processing and Conversion

4x Analog Out

MediorNet Compact

MediorNet Compact

MediorNet Compact

TRUCK

MetroN

MediorNet Compact

Integrated Signal Processing and Conversion

TCP/IP

RockNet Studer Card

MADI or AES

Ethernet Access

TNG-200

Studer Console

Commentary Application

COMMENTARY POSITION

AES3   HD-SDI   HD-SDI

AES3   HD-SDI   HD-SDI

AES3   HD-SDI   HD-SDI

MediorNet Compact

MediorNet Compact

MediorNet Compact

TRUCK

MetroN

MediorNet

Integrated Signal Processing and Conversion*

TCP/IP

RockNet Studer Card

MADI or AES

Ethernet Access

TNG-200

Studer Console

* QuadSplit and Video Format Converter require MN-HDP-6IO

Large Production Venue Application

NETWORK OPERATIONS CENTER

Integrated Signal Processing
and Conversion*

625i
Signal

1080i
Signal

720p Signal

Less cabling by combining
the basic infrastructures

- audio
- video
- data
- intercom

STUDIO A

Sound   Production   Vision/Tape

MASTER CONTROL ROOM

Video Router

EQUIPMENT ROOM

Video Router

STUDIO B

optional OB truck wallbox outside
the studio

PRESENTATION

Video Router

EDIT SUITE 1

MediorNet Compact

EDIT SUITE 2

MediorNet Compact

* QuadSplit and Video Format
  Converter require MN-HDP-6IO

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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.

MEDIORNET ↔ MEDIORNET
Ring Topology
MEDIORNET ↔ MEDIORNET ↔ MEDIORNET
Star Topology
MEDIORNET ↔ MEDIORNET   MEDIORNET   MEDIORNET
Daisy Chain Topology
MEDIORNET ↔ MEDIORNET
Mesh Topology
MEDIORNET ↔ MEDIORNET

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.

1 HD-SDI native signal / slice into 6.4 Mbit/s segments

2 load 6.4 Mbit/s segments into carrier containers / 10.31 Gbit/s

3 HD-SDI MADI HD-SDI / 10.31 Gbit/s

4 10.31 Gbit/s

5 recreate native signal / native signal HD-SDI
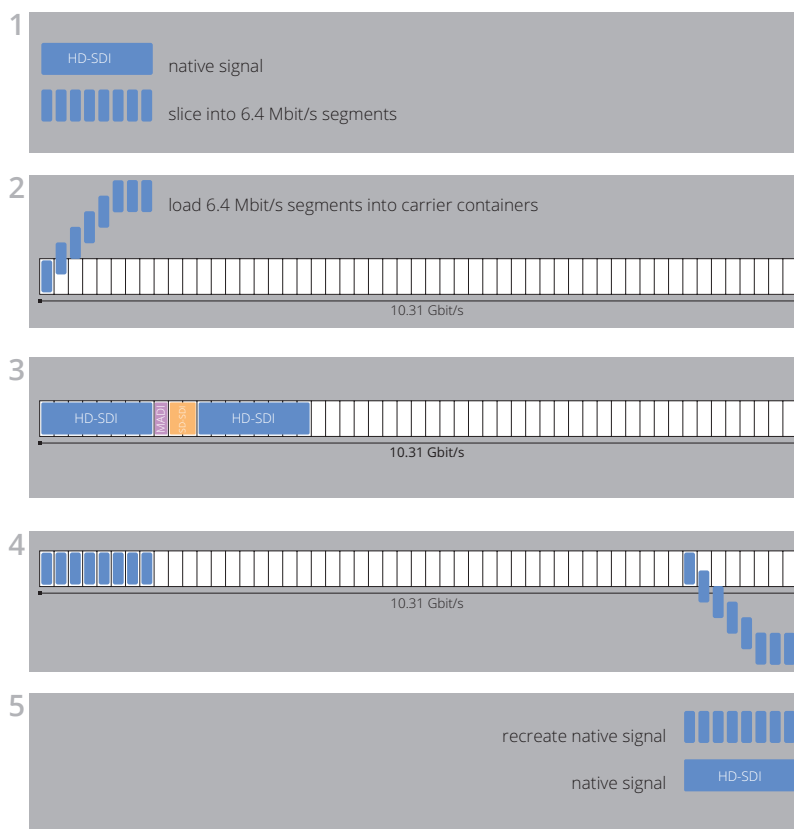
Synchronization

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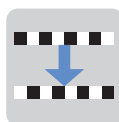Blackburst NTSC, TriLevel 720p25, TriLevel 1080p29.97, Blackburst PAL, TriLevel 720p24, TriLevel 1080p25, TriLevel 720p60, TriLevel 720p23.98, TriLevel 1080p24, TriLevel 720p59.94, TriLevel 1080i60, TriLevel 1080p23.98, TriLevel 720p50, TriLevel 1080i59.94, WordClock 48kHz, TriLevel 720p30, TriLevel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

MEDIORNET – 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.
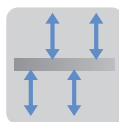
MN Frame Store / Frame Synchronizer

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.
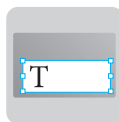
MN Test Pattern Generator

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
(MN-HDP-6-IO only)

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
(MN-HDP-6-IO only)

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.

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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 via one mouse 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 the active connections and how the signal is routed to the destination(s). 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
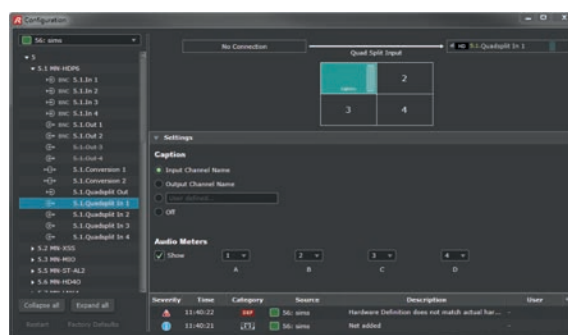
Configuration View for MN-HDP-6

The Matrix View of MediorWorks
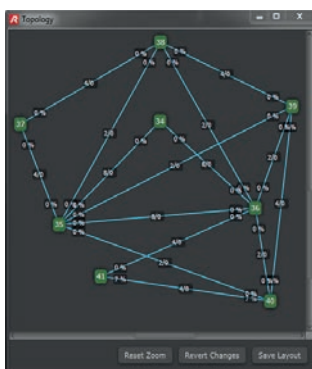
Topology

System Explorer

MEDIORNET Modular

MediorNet Modular allows the customers to configure the mainframe to their requirements. The frame can be filled with various Media and Link cards, as needed for the specific application.

Low Speed Card Slot (2x 125 Mbit/s)	High Speed Card Slot (2x 4.25 Gbit/s)	High Speed Card Slot (4x 4.25 Gbit/s)
High Speed Card Slot (2x 4.25 Gbit/s)	High Speed Card Slot (2x 4.25 Gbit/s)	High Speed Card Slot (4x 4.25 Gbit/s)
Low Speed Card Slot (2x 125 Mbit/s)	Processing Card Slot (16x 4.25 Gbit/s)	PSU 1 PSU 2
High SpeedCard Slot (2x 4.25 Gbit/s)		

MN-2RU Modular Mainframe

Each mainframe provides:
- 1 x slot for the processing card
- 6 x high-speed card slots (four with a 2x 4.25 Gbit/s and two with a 4x 4.25 Gbit/s connection to the backplane, designed for high data rate signals such as video signals or CWDM link cards)
- 2 x low-speed card slots (each one with 2x 125 Mbit/s connection to the backplane, designed for low data rate signals such as audio signals)
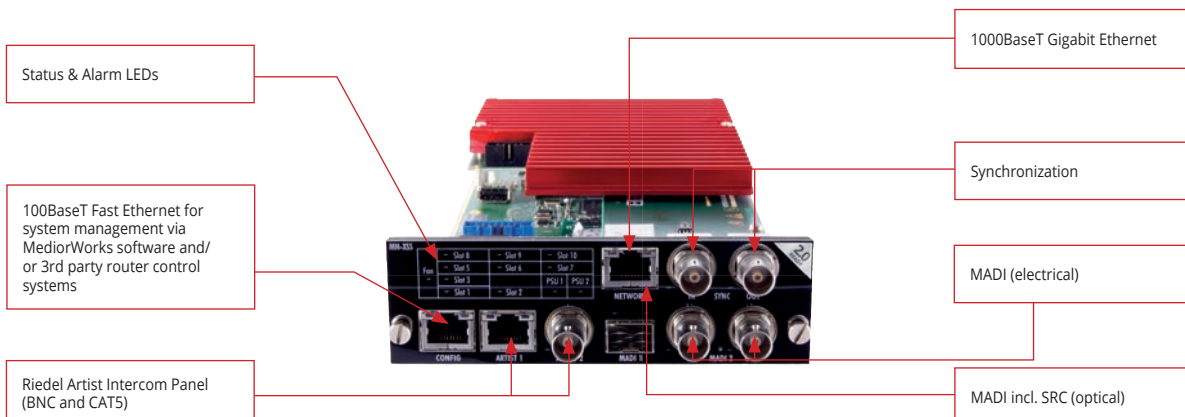
All modules and cards are hot swappable. Redundant power supplies guarantee maximum reliability. The optimized cooling concept of MediorNet results in a very low-noise system. The horizontal airflow within the device allows for effective cooling without the need for additional rack space below or above the MediorNet mainframe.

MediorNet frames can be rack mounted in various positions, e.g. with all connectors on the front or on the rear side, or recessed to allow cabling from the front but without connectors or cables exceeding the rack's dimensions. The IEC connectors can be located front or rear independent from the other cabling.

MN-XSS 2.0 Processing Card

The MN-XSS Processing Card serves as the heart of any MediorNet mainframe. It includes extensive LED status indicators for all cards and modules. The card ensures the optimal signal path and best use of available bandwidth. It also provides a universal router for all the individual media signals contained in the 16x16 high-speed MediorNet signals. MediorNet allows the user to build up a decentralized high-speed routing (<40ms) environment consisting of multiple MediorNet nodes. In addition, the card features a wide range of standard interfaces. These include:
- 1x 100BaseT Ethernet connection for system configuration or external router control systems
- 1x 1000BaseT Gigabit Ethernet for PC networks (transparent tunneling)
- 2x Artist intercom panel connectors (1x RJ45, 1x BNC, usable independent of one another)
- 2x bi-directional MADI interfaces (1x optical via SFP module, 1x electrical via two BNC connectors)
  The use of RIEDEL SFPs is required.
- 1x Sync In & 1x Sync Out via BNC connectors for frame synchronization

Status & Alarm LEDs

100BaseT Fast Ethernet for system management via MediorWorks software and/ or 3rd party router control systems

Riedel Artist Intercom Panel (BNC and CAT5)

1000BaseT Gigabit Ethernet

Synchronization

MADI (electrical)

MADI incl. SRC (optical)

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MEDIORNET
Link Cards for Optimal Use of Fiber

MediorNet offers Link Cards with and without integrated CWDM multiplexing to network MediorNet mainframes with a bandwidth of up to 76.5 Gbit/s on a single fiber link. MediorNet's standard fiber transceivers have an optical budget of 18 dB minimum, allowing for distances of up to 40 km (25 miles). A MediorNet fiber link always consists of duplex fiber to allow bi-directional signal transport. MediorNet CWDM Link Cards can also include external optical signals and transport them transparently through the system. All MediorNet Link Cards provide signal monitoring and link status information, which can be monitored via status LEDs and system wide via the MediorWorks software and SNMP network management systems.

2xHS*

1

MN-LNK4: 4xHS

MN-LNK2/LNK4 – 2/4 Channel Link Card

The MN-LNK2 Link Card features two SFP slots (MN-LNK4: four SFP slots) for single-mode and multi-mode SFP transceivers of any wavelength with a 4.25 Gbit/s transfer rate. The card allows for the interconnection of multiple MediorNet frames via two bi-directional duplex fiber connections (MN-LNK4: four bi-directional connections). *The use of RIEDEL SFPs is required.*

4xHS

1

MN-LNK8 CWDM – 8 Channel CWDM Link Card

The MN-LNK8CWDM Link Card features integrated CWDM multiplexing/de-multiplexing. The card multiplexes four MediorNet 4.25 Gbit/s signals plus four external fiber ports onto one single-mode duplex fiber, accessible via LC connectors. The external fiber ports are connected via four LC connectors.
MN-LNK8 CWDM is available with different wavelenghts.

8xHS

2

MN-LNK10 CWDM – 10 Channel CWDM Link Card

The MN-LNK10CWDM Link Card features integrated CWDM multiplexing/de-multiplexing. The card multiplexes eight bi-directional MediorNet 4.25 Gbit/s signals plus two external fiber ports onto one single-mode duplex fiber, accessible via LC connector. The external fiber ports are connected via two LC connectors.

8xHS

2

MN-LNK18 CWDM – 18 Channel CWDM Link Card

The MN-LNK18CWDM Link Card features integrated CWDM multiplexing/de-multiplexing. The card multiplexes eight MediorNet 4.25 Gbit/s signals plus up to ten additional external fiber ports via an ADD port onto one single-mode duplex fiber, accessible via LC connector and transporting up to 76.5 Gbit/s.

Media Cards for
True Network Integration

MediorNet Mainframes can be easily configured with the input and output cards needed for a specific installation. All Media Cards support multiple video standards and on-board signal processing and conversion, reducing the number of individual cards to a minimum. These signal standards and processing features can be updated via software, securing the hardware investment for future development.

Depending on their applications, the Media Cards differ in their slot and speed requirements.

2×HS — 2x High-Speed Port

4×HS — 4x High-Speed Port

8×HS — 8x High-Speed Port

LS — Low-Speed Port

1 — One Slot-Space needed

2 — Two Slot-Spaces needed

2×HS
1

MN-HD-4I – 3G/HD/SD-SDI Input Card (Electrical)

The MN-HD-4I Card provides four inputs with BNC connectors for four HD/SD-SDI/ASI or two 3G-SDI video sources. The card supports all relevant video standards up to 1080p@60Hz. Each input operates independently and is equipped with auto format detection and integrated signal processing and conversion features.

2×HS
1

MN-HD-4O – 3G/HD/SD-SDI Output Card (Electrical)

The MN-HD-4O Card provides four outputs with BNC connectors for four HD/SD-SDI/ASI or two 3G-SDI video devices. The card supports all relevant video standards up to 1080p@60Hz. Each output operates independently and is equipped with auto format detection and integrated signal processing and conversion features.

2×HS
1

MN-HD-6-IO – 3G/HD/SD-SDI Input/Output Card

The MN-HD-6-IO Card provides two inputs, two outputs and two user definable input or output connectors for six HD/SD-SDI/ASI or three 3G-SDI video sources. The card supports all relevant video standards up to 1080p@60Hz. Each input operates independently and is equipped with auto format detection and integrated signal processing and conversion features.

2×HS
1

MN-HDP-6-IO – 3G/HD/SD-SDI I/O Card with Enhanced Processing

The MN-HDP-6-IO Card provides the same connectors and features as the MN-HD-6-IO Card. In addition, the MN-HDP-6-IO Card includes additional processing power for features such as a Quad Split or Format Converters. All processing power is available as a system wide network resource.

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2 × HS

1

MN-ST-AL2 – Studer A-Link Interface Card

The MN-ST-AL-2 provides two ports each with redundant interfaces for connecting Studer mixing consoles via the STUDER A-Link protocol to Riedel MediorNet Modular frames. The card supports all STUDER Vista 5 and Vista 9 as well as OnAir 3000 consoles. *The use of RIEDEL SFPs is required.*

2 × HS

1

MN-HDO-4IO – Universal Video I/O Card (Optical)

The MN-HDO-4IO is a universal input and output card offering four bi-directional SFP ports that can be individually equipped with specially developed video interfacing SFPs for HDMI I/O, DVI or composite PAL/NTSC.

LS

1

MN-MIO – Multi I/O Interface Card

The MN-MIO Card allows for the connection of the MN-MBP Multi-I/O Breakout Panel to the MediorNet Mainframe via 2x 44 Pin Sub-D connectors. This Interface Card is available as electrically or transformer balanced version.

MN-Z-MBP – Multi-I/O Breakout Panel

The MN-MBP breakout panel offers eight AES, eight 4-wire connections (electronically balanced) over CAT-5, twelve GPIOs and four serial connections via Sub-D 9 pin connectors.

LS

1

MN-MA2-E/O – MADI Interface Card (Electrical/Optical)

The MN-MA2-EO Card is a 128 channel MADI interface providing one electrical MADI port via two BNC connectors and one optical MADI port via a SFP module (MN-MA2-O: two optical MADI ports / MN-MA2-E: two electrical MADI ports). *The use of RIEDEL SFPs is required.*

2 × HS

1

MN-ETH6 – Ethernet Card

The MN-ETH6 Card is an Ethernet card with six Ethernet ports providing tunneling for up to six 1 Gbit Ethernet connections. The ports' bandwidth is freely scalable to offer maximum fiber utilization. Each port of the card can be equipped either with optical or electrical connectors. *The use of RIEDEL SFPs is required.*

LS

1

MN-RN300 – ROCKNET Audio Interface Card

In addition to the MADI interfaces available on the processor card and the AES and 4-Wire connections available with the Multi-I/O Breakout Panel, the MN-RN300 Card provides an uplink and downlink CAT5 connector for Riedel RockNet digital audio networks to implement an audio break-out of up to 128 channels. RockNet provides a redundant CAT5 ring network for the distribution of audio and delivers state-of-the-art audio interfacing for any MediorNet installation.

For available audio and mixing console interfaces,
please refer to the "ROCKNET 300 Console Interfaces" section.

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

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.
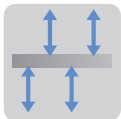
MN Embedder / De-Embedder

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.
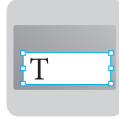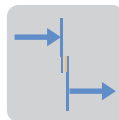
MN Caption

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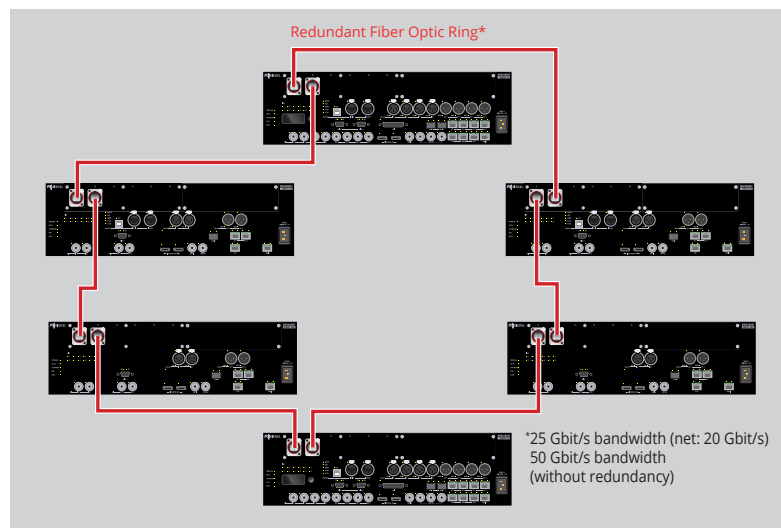
Video Output Phase Shift

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

Redundant Fiber Optic Ring*

*25 Gbit/s bandwidth (net: 20 Gbit/s)
50 Gbit/s bandwidth
(without redundancy)

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 MN-C-OPT-SDI-8O MN-C-OPT-SDI-4I4O	n/a n/a n/a	n/a n/a n/a	8x Video In (3G/HD/SD-SDI) 8x Video Out (3G/HD/SD-SDI)* 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

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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 HMDI In / 2x HDMI Out)
MN-C-OPT-HDMI-4I (4x HMDI In)
MN-C-OPT-HDMI-4O (4x HMDI Out)
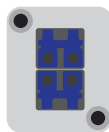
MN-C-OPT-ETH-4 (4x Ethernet)
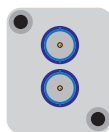
Fiber Options:

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.

MEDIORNET METRON CORE ROUTER

In enabling Riedel's acclaimed networked approach to signal distribution and routing, the 2-RU large-scale MediorNet MetroN Core Router provides 640-Gb real-time signal-routing capacity (64x10G 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. In addition MetroN allows for building video routers with up to 384 HD-SDI signal inputs and 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

- » 10G (4.25G) Link bandwidth
- » 640 GB signal routing capacity
- » 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.

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MEDIORNET MicroN

MicroN is an 80G media distribution network device for Riedel's MediorNet line of media transport and management solutions. Working seamlessly with the MediorNet MetroN core fiber router, MicroN is a high-density signal interface with a complete array of audio, video, and data inputs and outputs, including 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 in 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. Or, 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

MicroN Applications

Standalone

Operating in standalone mode, the MicroN can act as a 12x12 router and audio embedder/de-embedder with MADI SRC and delay, and also provides video frame sync and delay.

Point-to-Point

In a point-to-point deployment, multiple paired MicroN units can provide all of these capabilities plus support for up to 12 bi-directional SDI I/Os, two MADI I/Os, and a Gigabit Ethernet link.
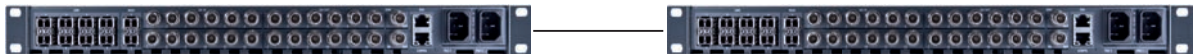
Meshed Network

Interconnecting MicroN nodes in a meshed fashion leads to 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 users to extend the router capacity in both signal capacity and distributed system locations by adding MicroN nodes to the network.
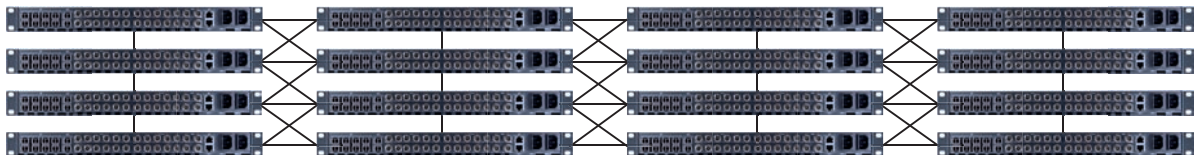
Router Function incl. MetroN and MicroN

Multiple MicroNs can be integrated as a central video router for redundant processing of up to 192x192 HD-SDI signals, and they can also be deployed in a distributed fashion as a decentralized video router.

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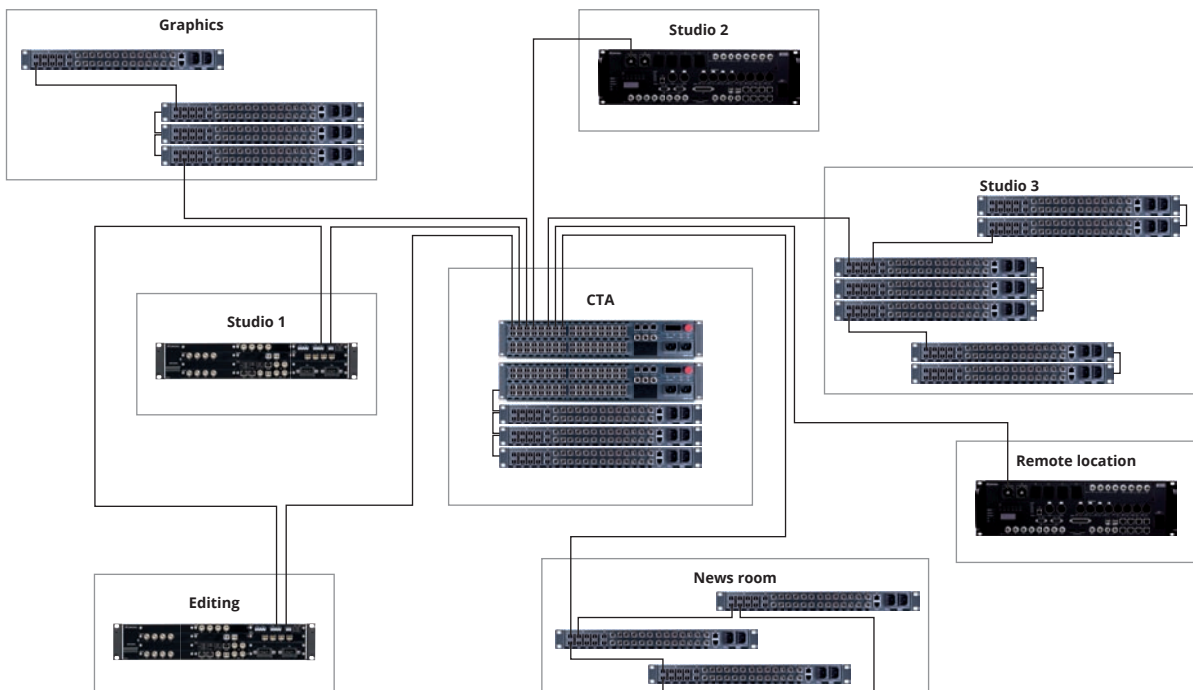
MEDIORNET Virtual Multiviewer

The MultiViewer App adds de-centralized 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 placed flexibly 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.

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

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The MediorNet MultiViewer features easy and intuitive configuration in a single view through a convenient drag-and-drop editor. The "Net Configurations" capability allows users to store configurations in network-wide storage rather than at a specific device. This feature also permits the easy transfer of configurations to a particular device and is fully supported through the MediorWorks configuration software and Ember+. Pre-defined layouts and templates support quick designs and can be manipulated both online and offine.

A fundamental benefit of a decentralized signal network is the ability to put signal inputs and outputs where they are needed, rather than at a large, monolithic router that requires additional cabling. These benefits apply to the MediorNet MultiViewer as well, since the MultiViewer hardware can be placed anywhere while leveraging the network for sources. In addition, integrating the MultiViewer into the MediorNet ecosystem removes an extra layer of gear and complexity.
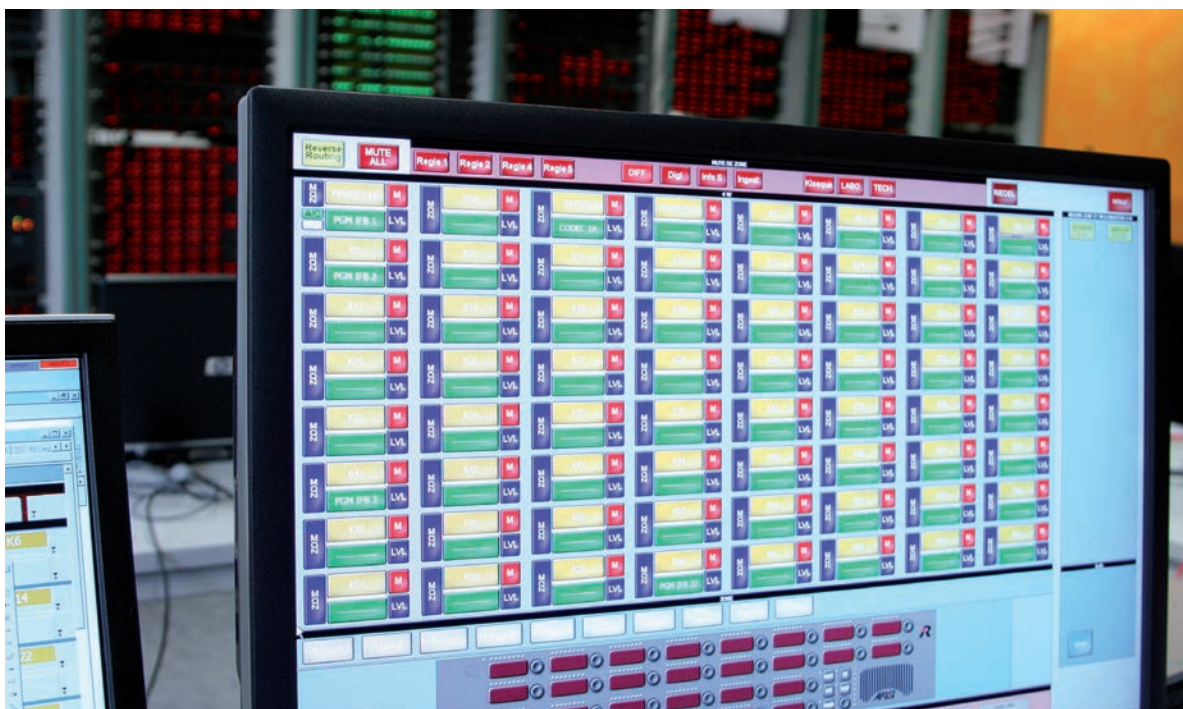
MediorNet – MultiViewer

» 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

MediorNet MultiViewer configuration tool

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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+, 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.

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
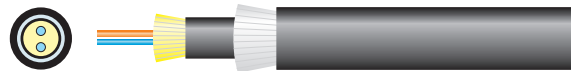
Riedel PURE CS Q
Ruggedized Tactical Fiber Cable / Ø 5.7 mm / Single-mode
Neutrik opticalCON QUAD connectors
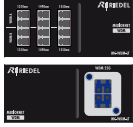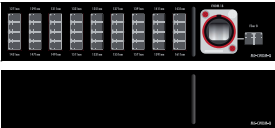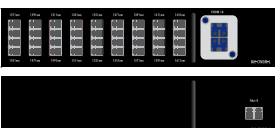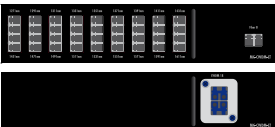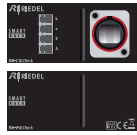
Riedel PURE XT Q
Ruggedized Dual Jacket Tactical Fiber Cable
Ø 9.0 mm / Single-mode
Neutrik opticalCON QUAD connectors

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
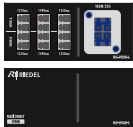» Exclusively with Neutrik opticalCON QUAD or
   opticalCON DUO connectors

CERTIFIED
opticalCON
ASSEMBLER

WDM/CWDM Multiplexing Modules

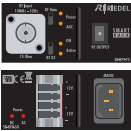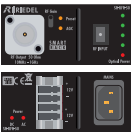| Module		Description
MC-WDM-Q		WDM Dual Multiplexer and De-Multiplexer (passive) for up to 6 duplex fiber connections, also recommended for interconnecting MediorNet frames. WDM connection with Neutrik opticalCon Quad single-mode. The 6 duplex fiber links must be connected via WDM single-mode SFP's 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-QT		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. WDM Neutrik QuadCon connection on the opposite side.
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-WDM-LT		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. WDM Neutrik QuadCon connection on the opposite side.
MC-CWDM-Q		CWDM Multiplexer and De-Multiplexer module (passive) for up to 18 duplex fiber connections, also recommended for interconnecting MediorNet frames. CWDM connection with Neutrik opticalCon Quad single-mode. The 18 CWDM duplex fiber links must be connected via CWDM single-mode SFPs 1271nm; 1291nm; 1311nm; 1331nm; 1351nm; 1371nm; 1391nm; 1411nm; 1431nm; 1451nm; 1471nm; 1491nm; 1511nm; 1531nm; 1551nm; 1571nm; 1591nm; 1611nm. (SFP modules not included). SR12 housing for up to 2 modules in one SR-1 module carrier frame. All connections on the same front panel.
MC-CWDM-QT		CWDM Multiplexer and De-Multiplexer module (passive) for up to 18 duplex fiber connections, also recommended for interconnecting MediorNet frames. CWDM connection with Neutrik opticalCon Quad single-mode. The 18 CWDM duplex fiber links must be connected via CWDM single-mode SFPs 1271nm; 1291nm; 1311nm; 1331nm; 1351nm; 1371nm; 1391nm; 1411nm; 1431nm; 1451nm; 1471nm; 1491nm; 1511nm; 1531nm; 1551nm; 1571nm; 1591nm; 1611nm. (SFP modules not included). SR12 housing for up to 2 modules in one SR-1 module carrier frame. WDM Neutrik QuadCon connection on the opposite 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-CWDM-LT		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. LC Duplex CWDM connection on the opposite 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.
MC-QP-T		Patch module for Neutrik opticalCon Quad on 2 LC Duplex. SR11 Smart Rack housing for up to 4 modules in one SR-1 frame. Dual LC Duplex CWDM connection on opposite panel.

RF-over-Fiber Modules

Transmitter		Fiber Optical Transmitter for RF signals, 10MHz- 1000MHz +- 1dB flatness; max +15 dBm Input Power, fixed gain or AGC, 4.5dBm Optical Output Power, SC/APC. Switchable 12VDC Antenna Feed max. 400mA. 12VDC input for redundant DC Power feed. SR11 Smart Rack housing for up to 4 modules in one SR-1 frame.

Versions

	50 Ohm	75 Ohm
1310 nm	SR-RFT-501310	SR-RFT-751310
1490 nm	SR-RFT-501490	SR-RFT-751490
1550 nm	SR-RFT-501550	SR-RFT-751550

Receiver		Fiber Optical Receiver for RF signals, range 10MHz- 1000MHz +- 1dB flatness, fixed gain or AGC, SC/APC wide band fiber input. Bar graph display for optical input level. 12VDC input for redundant DC Power feed. SR11 Smart Rack housing for up to 4 modules in one SR-1 frame.

Versions

	50 Ohm	75 Ohm
	SR-RFR-50	SR-RFR-75

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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 solution 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). The WDM connectors are available on either the front or the back of each interface.
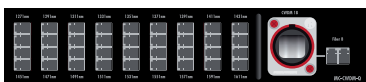
MC-CWDM CWDM Multiplexer and De-Multiplexer

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. The CWDM connectors are available on either the front or the back of each interface.

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.

SR-RF RF-over-Fiber Module

The Riedel SR-RF series is the ideal tool for remoting antennas over long distances. The compact units convert analog RF signals into optical modulated signals, which are then transmitted via fiber. At the remote location the optical signal is re-converted into an analog RF signal. RF-over-fiber links can be used for RF receivers and transmitters.

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FIBER ACCESSORIES

Performance Audio Networks

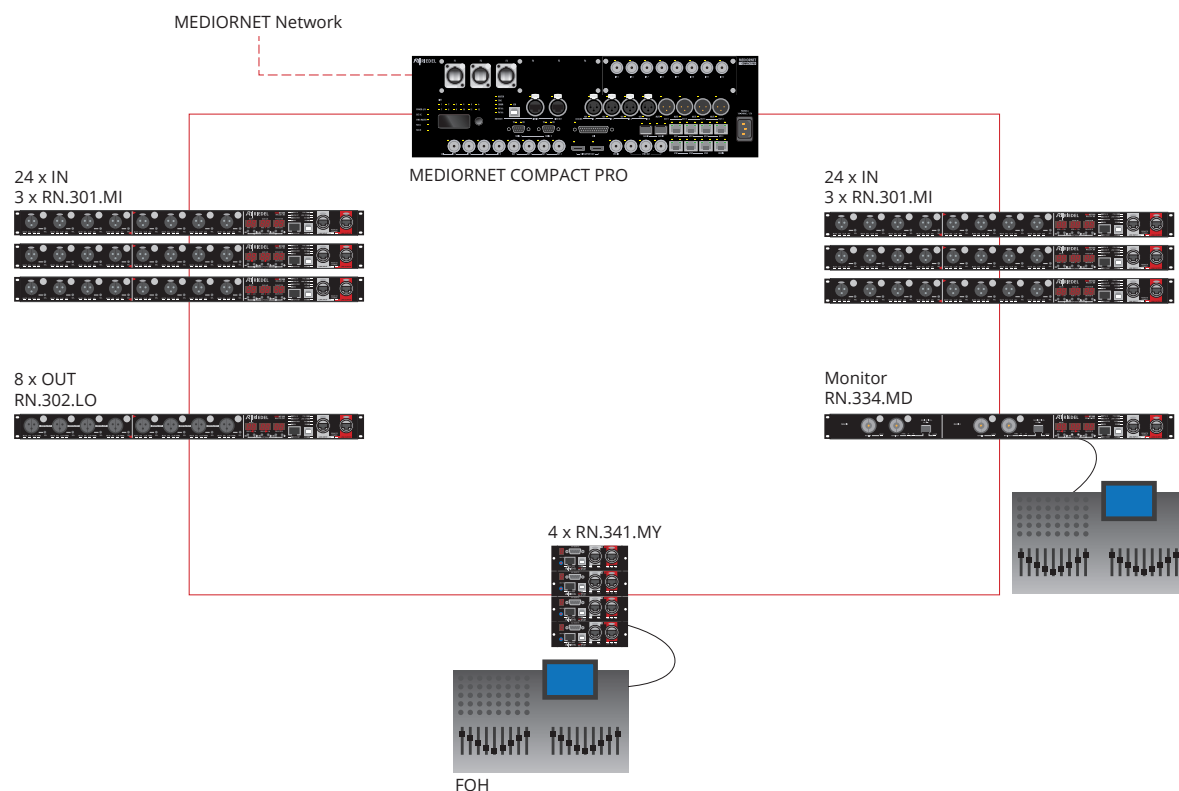RockNet is a real-time, low latency audio distribution network tailored to tour and installed sound applications. RockNet provides a universal solution to almost any imaginable audio distribution challenge and behaves very much like a traditional analog split system. It conveys up to 160 24 bit/48 kHz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

ROCKNET – Features

» 160 channels (RockNet 300)
   80 channels (RockNet 100)
» Up to 99 devices in one network
» CAT-5 redundant network interface
» Independent Gain
» Front panel operation
» Redundant power supplies (RockNet 300 only)
» 48 kHz or 96 kHz sample rate (96 kHz RockNet 300 only)
» Status indicators (LEDs)
» Remote Control

MEDIORNET Network

MEDIORNET COMPACT PRO

24 x IN
3 x RN.301.MI

24 x IN
3 x RN.301.MI

8 x OUT
RN.302.LO

Monitor
RN.334.MD

4 x RN.341.MY

FOH

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FIBER ACCESSORIES

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.

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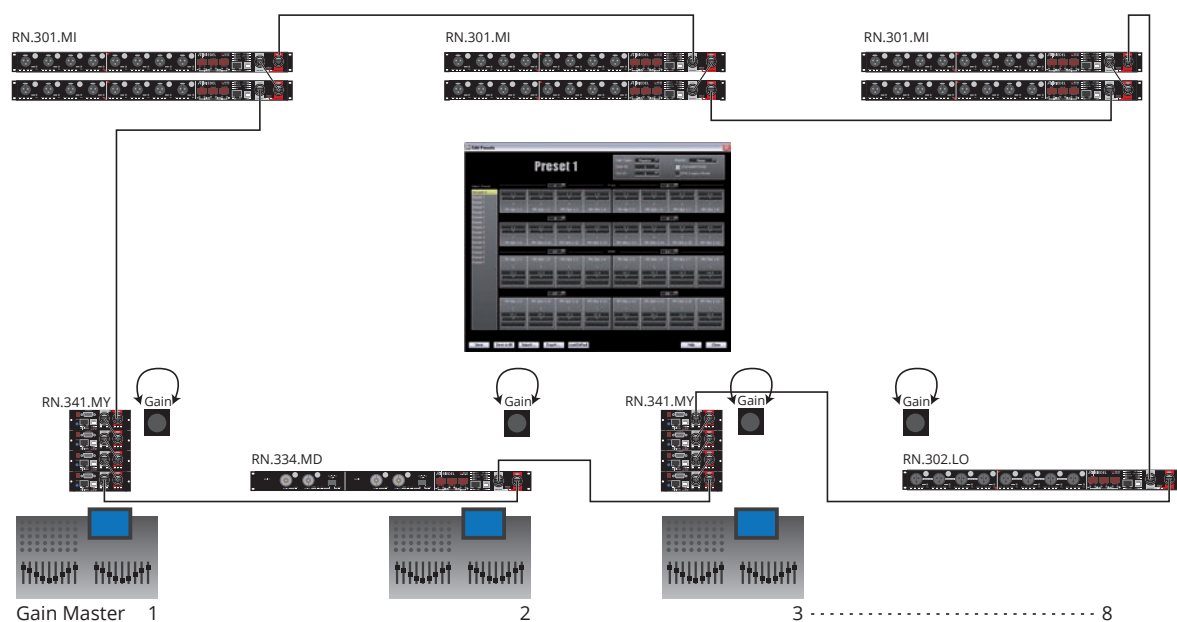
ROCKWORKS
RockNet Remote Control Software

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 being able 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).
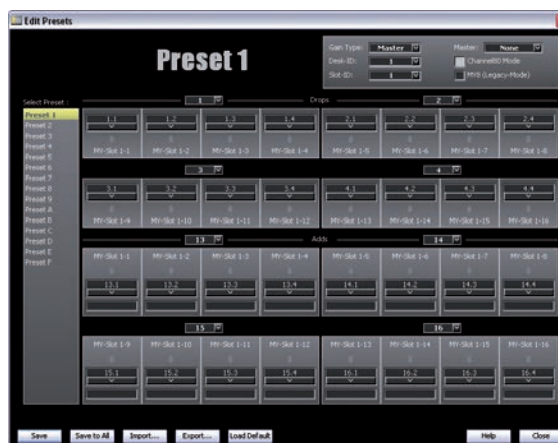
ROCKNET 300 Analog Modules

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

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FIBER ACCESSORIES

RN.341.MY Yamaha Interface Card

The RN.341.MY card fits into a Yamaha MY-card expansion slot and gives access to 16 input and 16 output channels. A wordclock input and output is available to the host device via the backplane connector and a front panel rotary switch is provided for device identification and selection of up to 15 programmable routing tables. The RN.341.MY makes the respective Yamaha product become a part of the network and enables the remote control of the RN.301.MI microphone pre-amplifiers. Remote control is supported by either a 9-pin connector or via the backplane (for LS9 consoles). The card is compatible with the following Yamaha host devices: DM1000, DM2000, DME24N, DME64N, LS9-16, LS9-32, M7CL, PM5D, PM5D RH, 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 VI1, VI2, VI4, VI6 und Studer Vista 5, Vista 7, Vista 8 and Vista 9.
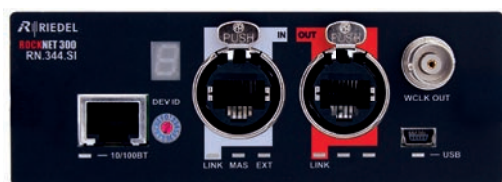
RN.344.SI Soundcraft SI Compact Interface Card

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 100 Series

RockNet 100 is the cost effective solution to enter the world of RockNet digital audio networks. Based on the renowned RockNet 300 technology, RockNet 100 provides the same digital audio quality and ease of use with a reduced number of 80 channels. Of course all RockNet 100 devices are compatible with the RockNet 300 series.

RockNet 100's rugged steel enclosure is made for heavy-duty road use and offers the distinct advantage of magnetic shielding. All connectors are gold plated. The circuit design is streamlined to ultra low noise and minimum distortion to meet the highest demands in audio quality.

The RN.101.IO provides 16 microphone/line input and 8 line output channels on XLR connectors, while the RN.102.IO provides 8 microphone/line inputs and 16 line outputs.

The circuit design is optimized to maximize audio quality. The mic pre-amps are similar to the highly acclaimed 300 series pre-amps and the converters are characterized by high definition and wide dynamic range based on proprietary technology.

Any input channel of the RockNet 100 interfaces can be remotely controlled by digital mixing consoles or the RockWorks PC/Mac software:
 • pre-amp gain adjustable between -6dB and +66dB in 1dB steps
 • select 48V phantom power (with auto-mute)
 • mute channel

Each output channel can be controlled by the RockWorks software: output level adjustable between -9dBu and +24dBu in 1dB steps..

ROCKNET 100 – Features

 » Cost-effective digital snake/audio network solution
 » 80 channels via locking EtherCon RJ45 cables
 » Network redundancy
 » Simple user interface – no computer required
 » Remote control
 » Superb audio quality

RN.101.IO Microphone / Line Input & Line Output

The RN.101.IO provides 16 line/microphone inputs (with 48V phantom power) and 8 line output channels on XLR connectors. The circuit design is optimized to maximize audio quality. The mic preamps are similar to the highly acclaimed 300 series preamps.

RN.102.IO Line Output & Microphone / Line Input

The RN.102.IO provides 16 output channels and 8 line/microphone input (with 48V phantom power) on XLR connectors. The circuit design is optimized to maximize audio quality.

RN.141.MY Yamaha Console Interface

The RN.141.MY card fits into a single MY card expansion slot of various Yamaha products and gives access to 16 input and 16 output channels. A wordclock input and output is available to the host product via the backplane connector. By using the RN.141. MY the respective Yamaha product becomes a part of the RockNet network. Remote control is supported by either a 9-pin connector or via the backplane (for LS9 consoles). The card is compatible with Yamaha DM1000, DM2000, DME24N, DME64N, LS9-16, LS9-32, M7CL, PM5D, PM5D RH, TX4n, TX5n and TX6n host devices.

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

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.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	selectable per channel
Mute		
Equivalent Input Noise (EIN)	-127 dBu	@ Gain 66 dB	150 Ω Source, 20 kHz BW
	-151 dBFS	
	-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

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

RN.101.IO & RN.102.IO Microphone Pre-amp / Line Output

Inputs

Gain Range	-6 .. 66 dB		150 Ω Source
Gain Step	1 dB		+/- 1dB
Sensitivity	+30 dBu .. -42 dBu		Max. before clip
Max. Input Level	+30 dBu		
Input Impedance	5.5 kΩ		
Phantom Power	+48 V selectable per channel		
Equivalent Input Noise (EIN)	-127 dBu	@ Gain 66 dB	150 Ω Source, 20 kHz BW
	-151 dBFS		
	-121 dBu	@ Gain > 30 dB	
Dynamic Range	114 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	< -120 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

Outputs

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%		
Noise	-90 dBu	@ +24 dBu Out	„A" weighted
Dynamic Range	114 dB		
Frequency Response	- 0.1 dB	20 Hz .. 20 kHz	@ FS = 48 kHz
Crosstalk	< -120 dB	@ 15 kHz	adjacent channels
Total Harmonic Distortion	< 0.001%	@ +24 dBu Out	100 Hz - 10 kHz; 600 Ω Load, 20 kHz BW
	< 0.002%	@ + 4 dBu Out	
Resolution	24 Bit		
Delay	330 µs		@ FS = 48 kHz

Overall

Operating Temperature	32 .. 122° F	0 .. 50° C
Power Requirements	100 .. 240 VAC	47 .. 63 Hz
Power Consumption	45 VA	
Dimensions (W x H x D)	19" x 5.25" x 3.5"	483 x 133 x 90mm
Weight	7.7 lbs	3.5 kg

MEDIORNET
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FIBER ACCESSORIES

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
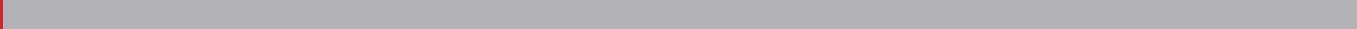
Applications

RockNet 300 Application: Live Recording Event with two Stages

RF 16 x IN + 8 x OUT In-Ear

128 x OUT Recording

RN.334.MD

RockNet 100

128 x OUT OB Truck and 128 x IN Playback

RN.334.MD

Stage A 64 x IN

RN.301.MI

Stage A Monitor

RN.341.MY

Stage B Monitor

RN.334.MD

Stage B 64 x IN

RN.301.MI

Digital Out PA

RN.332.DO

RN.352.FO

Fiber Link

RN.351.FI

Stage A FOH

RN.343.VI

Digital Out Delay

RN.332.DO

Digital Out PA

RN.332.DO

Stage B FOH

RN.343.VI

Press Split

RN.302.LO

Digital Out Delay

RN.332.DO

Digital Out Delay

RN.332.DO

Repeater

RN.362.IR

Digital Out Delay

RN.332.DO

MEDIORNET
Real-time Media Network

ROCKNET
Digital Audio Network

RILINK
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FIBER ACCESSORIES

RockNet 100 Application: Live Concert
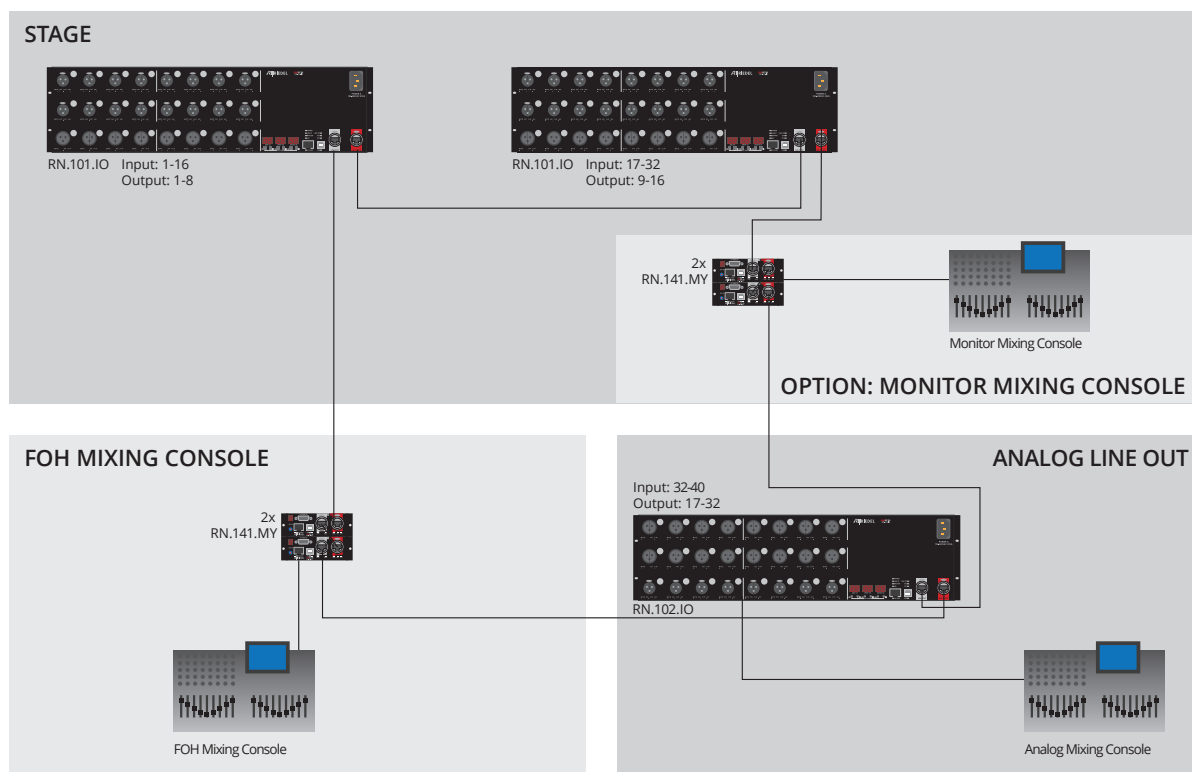
STAGE

RN.101.IO Input: 1-16
Output: 1-8

RN.101.IO Input: 17-32
Output: 9-16

2x
RN.141.MY

Monitor Mixing Console

OPTION: MONITOR MIXING CONSOLE

FOH MIXING CONSOLE

ANALOG LINE OUT

Input: 32-40
Output: 17-32

2x
RN.141.MY

RN.102.IO

FOH Mixing Console

Analog Mixing Console

MEDIORNET
Real-time Media Network

ROCKNET
Digital Audio Network

RILINK
Global Fiber Service

FIBER ACCESSORIES

RILINK – The Intelligent Live Broadcast Alternative to Satellite Links

Riedel's RiLink is the new way to connect broadcast live signals from remote event locations to the studio or to connect foreign studios with their home facility. Based on Riedel's own global backbone, the RiLink Global Fiber Service transports more than just the HD/SD-SDI video signals that would be furnished by satellite links in a conventional production. It also provides additional features such as voice communication and internet access which significantly reduce complexity, costs for planning and operating costs of remote event productions.

Features:

Bi-directional
The RiLink links are always bi-directional, providing further flexibility and the ability for return video feeds, digital archive access and full-duplex communication.

Faster
RiLink's latency is significantly shorter than any satellite link.

Flat rate
RiLink is charged at a flat rate for the complete duration of an event. This allows for precision budget planning and more live pre and post-event features or news reports at no extra costs.

High-quality
RiLink's high bandwidth allows for better video quality than satellite links.

Everywhere
RiLink is available everywhere on the planet, no matter if the production is in Beijing, downtown Manhattan or in the middle of Monument Valley.

Versatile
RiLink is the ideal solution for both temporary and permanent installations.

Added value
RiLink provides more than just global video contribution: RiLink transports several video signals at once (point-to-point and point-to-multipoint) and also includes integrated connectivity for multi-channel full-duplex voice communication (Intercom, VoIP telephony), multi-channel audio and secure transport of IP-data (VPN, Internet). Since RiLink's guaranteed bandwidth can be allocated dynamically, non-broadcast time could be used for other applications, for example high-bandwidth file transfers.

Reliable
The RiLink global fiber service is completely unaffected by weather conditions that might impact SNG applications. Furthermore, RiLink includes multi-level redundancy within the complete signal transport chain, providing maximum reliability and quality of service (QoS).

Full Service
Riedel's RiLink is a full service end-to-end solution: You choose the locations and signals you'd like to transport and Riedel provides you a plug-&-play RiLink solution. In addition, Riedel can also provide optional services like on-site fiber signal transport, venue cabling and on-site wireless transport of video & audio signals.

MEDIORNET
Real-time Media Network

ROCKNET
Digital Audio Network

RILINK
Global Fiber Service

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REMOTE SITE

Video
ASI, 3G/HD/SD-SDI

Audio
analog, AES, MADI

Communication
VoIP, Intercom

Data
IP

Riedel RiLink

Optional:
Riedel Data Center

STUDIO

Video
ASI, 3G/HD/SD-SDI

Audio
analog, AES, MADI

Communication
Intercom, VoIP

Data
IP
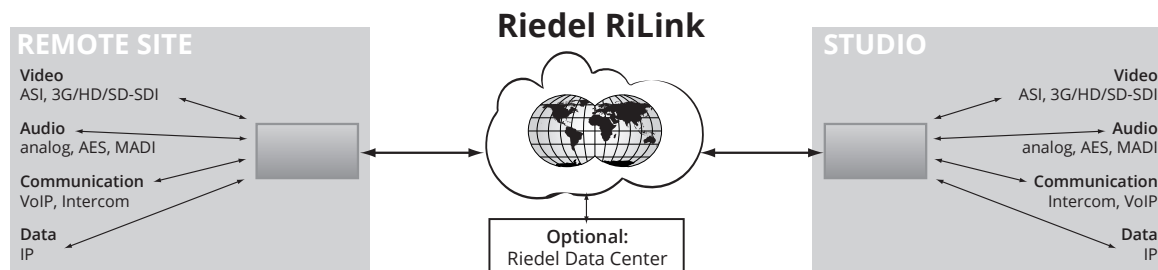
Formats:

Riedel RiLink is a global multi-format signal transport solution supporting the following signals:

- Video: ASI, 3G-/HD-/SD-SDI (H.264, MPEG2, JPEG2000 / 4:2:0, 4:2:2 / 10 bit video resolution)
- Audio: analog, AES3/EBU, MADI
- Communication: VoIP, Artist, TETRA-over-IP
- Data: TCP/IP, UDP, etc.

Comparison

	RiLink	Satellite Link
Bi-directional video	Yes	Only via 2nd link
Independent from weather conditions	Yes	No
Latency (e.g. within Europe)*	approx. 30 ms	approx. 300 ms
Transmission	Always (24h/day)	booked time-slots
Payment terms	Flat-rate	Every minute
Transportation costs	Shipment of a flightcase	Shipment & travel expenses for SNG and crew
Added Value	• multi-channel full-duplex voice communications (Intercom, VoIP telephony) • multi-channel audio • secure transport of IP-data (VPN, Internet) • high-bandwidth file transfer (e.g. for digital archives)	n/a

* provider edge to provider edge (not incl. FEC, Format Converter, Coding and De-Coding)

How to get a quote for your application?

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

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

Riedel's Global Fiber Network
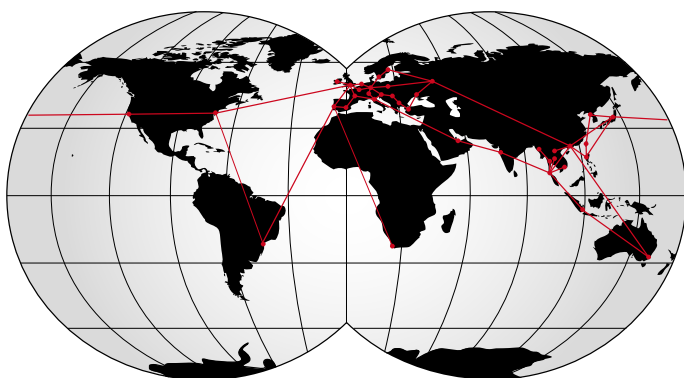
How does RiLink work?

Riedel's global fiber 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 fiber service provides a secure and fully transparent end-to-end solution with dedicated connections.

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.

Moving event locations

- 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
- ORF@F1, transmission of live HD 1080i signal on H.264 from alle European and selected oversea race tracks to Vienna broadcast station with embedded audio channels plus data service, including off-peak usage in case of no video signal transmission
- BP Satellite@F1, transmission of 2x live SD 720p signals for MTV3 and Viasat from every race track to Wijchen plus Internet Access
- 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

- ARD@Cairo, connecting their Egyptian foreign office of ARD to its Stuttgart broadcast station via MPLS for live HD 1080i signal transmission and for file transfer during off-peak usage
- 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

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ROCKNET
Digital Audio Network

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Global Fiber Service

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References (selected)

Customer:	NOS (Netherlands)
Project:	Winter Games 2014 in Sochi
Task:	Transmit live broadcast signal to Hilversum broadcast station

live Tahrir-Platz/Kairo

tagesschau

Customer:	ARD (Germany)
Project:	Egyptian foreign office at Cairo (since 2013)
Task:	Connect ARD's Cairo office to its Stuttgart broadcast station via MPLS

Customer:	RussiaToday
Project:	German foreign office at Berlin (since 2013)
Task:	Connect RussiaToday's office to its Moscow broadcast station via MPLS

Customer:	RTL (Germany)
Project:	Formula One Season (since 2011)
Task:	Transmit live broadcast signal from every racetrack, provide archive access & intercom connectivity to main facility in Cologne (Germany)
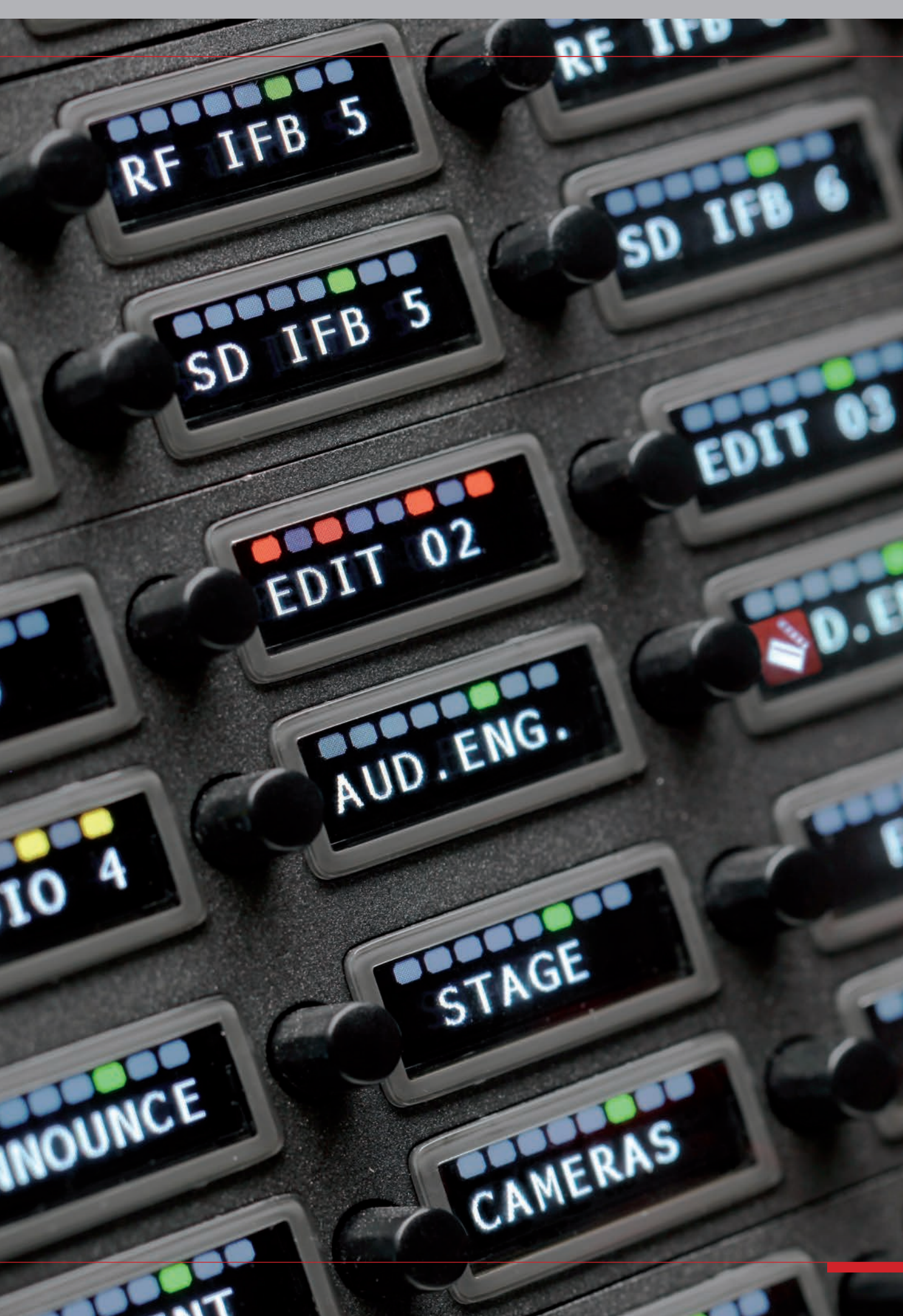
ARTIST / TANGO
Digital Matrix Intercom

PERFORMER
Digital Partyline Intercom

ACROBAT
Digital Wireless Intercom

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ARTIST
The Advanced
Communications Platform

Artist is a highly modular concept driving modern intercom demands. It is designed as a powerful matrix platform for intercom and the distribution of analog audio, digital audio and Ethernet data signals. The system consists of a fiber based network backbone providing a decentralised infrastructure for live audio and intercom applications.

Artist is a digital matrix intercom system providing up to 1,024 x 1,024 non-blocking ports per system. The system is based on a dual optical fiber ring to form a single large, full summing, non-blocking distributed matrix. The system still "feels" like a single unit: it is completely non-blocking and has no limitations in the number of cross-points within or between the different nodes of the system.

The maximum distance between two nodes can be up to 500 m (1650 ft) as standard, and optionally up to 80 km (50 miles). With up to 128 intercom ports per matrix frame, Artist allows a high degree of decentralisation of the entire matrix in a very cost-effective way. As a result the matrix frames can be located near the intercom stations of a specific studio or production facility, saving a considerable amount of wiring and installation costs.

ARTIST – Key Benefits

» Distributed masterless system architecture significantly reduces wiring and installation costs
» Artist's flexibility allows versatile usage and quick adaption to new production needs
» The system's scalability and expandability makes Artist a secure long-term investment
» The easy and intuitive programming reduces training and service time while providing increased flexibility
» German engineering and quality manufacturing

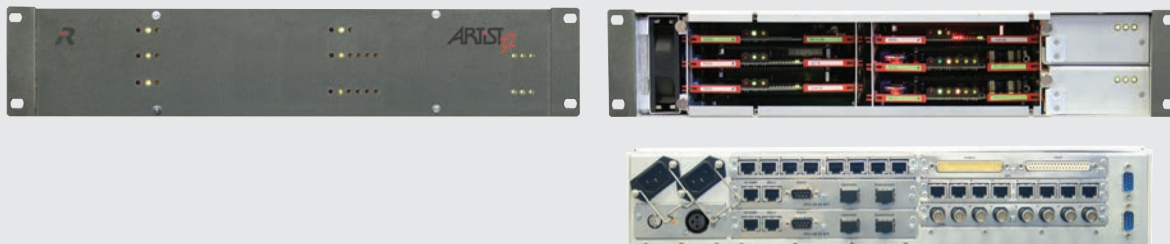| Features	Artist 32	Artist 64	Artist 128
Maximum matrix size	1024 x 1024	1024 x 1024	1024 x 1024
Distributed, masterless system architecture	yes	yes	yes
Redundant dual ring fiber optic network	yes	yes	yes
Up to 128 network nodes within a single fiber network	yes	yes	yes
DSP at every I/O for audio signal processing	yes	yes	yes
VOX at every port	yes	yes	yes
Hot swap of all modules	yes	yes	yes
Redundant power supplies	yes	yes	yes
Redundant node controller	yes	yes	yes
Ethernet tunneling through Ethernet interface	yes	yes	yes
Intuitive configuration software	Director	Director	Director
Max. ports per frame	32	64	128
Multiple PCs can configure the same system / user rights management	yes / yes	yes / yes	yes / yes
Number of controller / client / GPI card slots per frame	2 / 4 / 1*	2 / 8 / 1*	2 / 16 / 3*
External sync (AES3 / Word Clock)	optional	optional	optional
Stand alone version	yes	yes	yes
Alarm signalization (Hardware/Director)	yes / yes	yes / yes	yes / yes

* Installation with one Controller Card slot used for a GPI Card.

System components

Mainframes		MFR-032 G2	MFR-064 G2	MFR-128 G2
Controller cards		CPU-128 G2	CPU-128 G2	CPU-128 G2
Fiber optic modules	(single-mode)	ART-Z-SFP-CPU-SM-1310-10,5-1,25Gbps	ART-Z-SFP-CPU-SM-1310-10,5-1,25Gbps	ART-Z-SFP-CPU-SM-1310-10,5-1,25Gbps
	(multi-mode)	ART-Z-SFP-CPU-MM-850-8,5-1,25Gbps	ART-Z-SFP-CPU-MM-850-8,5-1,25Gbps	ART-Z-SFP-CPU-MM-850-8,5-1,25Gbps
	(high power)	ART-Z-SFP-CPU-MM-1310-10-1,25Gbps	ART-Z-SFP-CPU-MM-1310-10-1,25Gbps	ART-Z-SFP-CPU-MM-1310-10-1,25Gbps
Power supplies		PSU-032 G2	PSU-064 G2	PSU-128 G2

Client Cards

	Artist 32	Artist 64	Artist 128
Digital Client Card Coax 8 digital control key-panel ports on individual 75Ω BNC connectors for connection of Artist key panels using coax cable	COX-108 G2	COX-108 G2	COX-108 G2
Digital Client Card CAT5 8 digital control key-panel ports on individual RJ-45 connectors for connection of Artist key panels using CAT5 computer cable	CAT-108 G2	CAT-108 G2	CAT-108 G2
Analog Client Card 8 transformer balanced (AIO-109 G2: electronically balanced) 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.	AIO-108 G2 (AIO-109 G2)	AIO-108 G2 (AIO-109 G2)	AIO-108 G2 (AIO-109 G2)
Digital Client Card AES Digital audio I/O-card (4x AES3) incl. Sample Rate Converter on RJ-45 for connection to digital mixing consoles, routers etc.	AES-108 G2	AES-108 G2	AES-108 G2
GPI Client Card 16 outputs (300 mA, 60V) and 16 opto-isolated level inputs (5-48V) on SubD37 to read Tallies, key transmitters, etc.	GPI-116 G2	GPI-116 G2	GPI-116 G2
8 Channel MADI Client Card Cascadable to 64 channels on one MADI stream. Includes audio & panel data to remote panels or connect multi-channel audio to audio routers. Optical & Coax MADI links are supported.	MADI-108 G2	MADI-108 G2	MADI-108 G2
8 Channel VoIP Client Card (EBU Tech 3347 compatible) Converts 8 Artist control key-panel ports into a compressed IP-stream and vice versa, SIP-based, RJ45 connector	VOIP-108 G2	VOIP-108 G2	VOIP-108 G2
8 Channel Ethernet AVB Client Card (AVnu AVB) Converts 8 Artist control key-panel ports into an Ethernet AVB stream and vice versa, RJ45 connector / prepared for AES-67	AVB-108 G2	AVB-108 G2	AVB-108 G2
8 Channel AES67 Client Card Converts 8 Artist control key-panel ports into an IP AES67 stream and vice versa on RJ45 connector	AES67-108 G2	AES67-108 G2	AES67-108 G2

Artist 32 (front, open & rear view)

Artist 64 (front & rear view)

Artist 128 (front & rear view)

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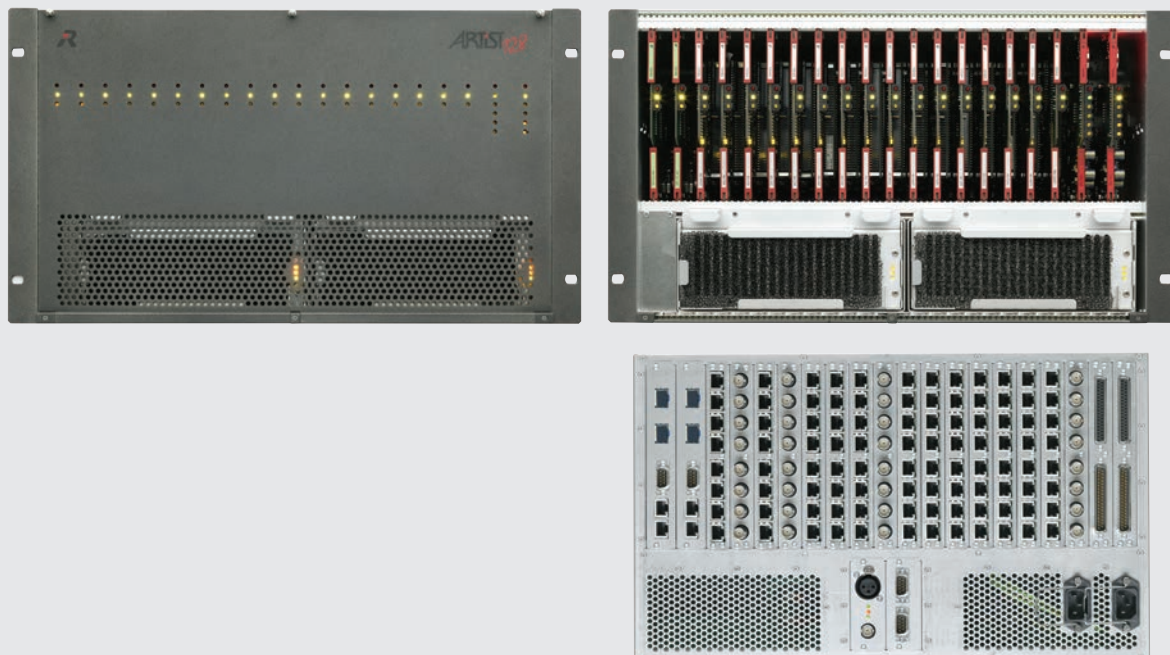
ARTIST Matrices
Scalable System Frames that
Grow with your Demands

Riedel Artist is a true network infrastructure based on highly modular matrix mainframes. The individual Artist matrix mainframes can be equipped exactly as needed. But it is not only the mainframes themselves being modular and thus expandable, it's also the system's distributed architecture itself.

Simply select the desired frame size and add the client cards you need. As your demands grow, you can easily expand your system by adding new client cards or additional frames to your system. And if you need to exchange a smaller frame for a bigger one you don't need to buy new controller & client cards. Since all Artist frames feature the same type of cards, you can just simply use the cards you were using before. This scalability and expandability makes Artist a secure long-term investment.

Up to 128 ports can be accommodated in a single frame and up to 100 frames can be connected to a redundant dual fiber optic ring resulting in a maximum matrix size of 1,024 x 1,024 non-blocking intercom ports. The system still "feels" one unit: it is completely non-blocking and has no limitations in the number of cross-points within or between the different nodes of the system. In addition, up to 50 Artist intercom systems can be trunked over long distance (POTS, ISDN, VoIP) and over short distance (analog audio, MADI, AES, AVB, ...) using the Trunk Navigator software to a system size of 51,200 ports.

Client Cards available for ARTIST:
- Analog 4-wire I/O
- AES3 I/O
- GPI/O
- MADI
- Voice-over-IP (EBU Tech 3347 compatible)
- Ethernet AVB / prepared for AES-67
- AES-67

ARTIST Matrices – Key Benefits

» Easily scaleable from 8 x 8 to 1,024 x 1,024 full summing, non-blocking ports, further expansion via trunking to 50,200 ports.
» Fully redundant system with a redundant dual ring fiber optic network. All modules are hot-swappable.
» Easy system expansion – all matrix frames feature the same type of controller & client cards. This also reduces significantly the need for spare pooling.
» Extensive interfacing via client cards provides for easy system integration.
» The system's scalability and expandability makes Artist a secure long-term investment.
» Efficient cooling concept results in a very quiet system – an advantage not only for mobile production units.

Artist 32 Matrix

Artist 64 Matrix

Artist 128 Matrix

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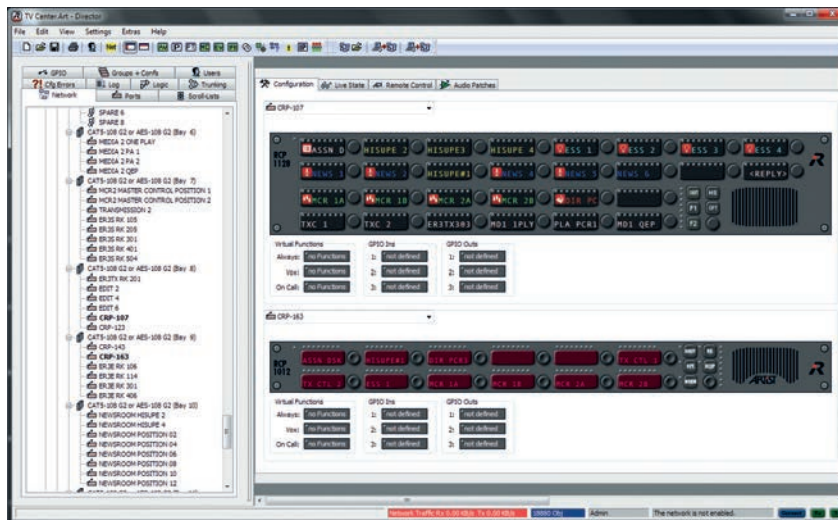
Access, set-up and control of any aspect of an Artist system consisting of hundreds of intercom ports on multiple nodes is achieved using the comfortable and intuitive Director configuration software.

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. 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
- » 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
- » Route audio command
- » Programmable logic functions
- » Free definable markers

Add-on Features

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The modularity of the Artist platform is also implemented with the Director configuration software. Already noted as a powerful tool, Director can be 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 potion of a configuration. These "partial files" can be reloaded so that system setups for different types of productions can be more 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 a 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 diverse Artist Intercom systems by dynamically allocating audio trunk lines between their locations. These trunk lines could 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. Trunk Navigator allows the trunking of up to 50 Artist intercom systems with a total system size of 51,200 ports.

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.

ARTIST – System Overview

Due to its decentralized infrastructure, its modularity and its extensive interfacing capabilities the Artist platform is flexible enough to meet all your live audio and talkback application needs. Even in huge installations consisting of hundreds of intercom ports with multiple nodes, the access, set-up and control of any aspect of the entire system is easily handled using the comfortable and intuitive Director configuration software.

RCP 1100 Panels

Fiber up to 2 km

PC for system configuration and monitoring

Director

CAT / Coax

CAT / Coax

RCP 1000 Panels

CAT / Coax

Wireless Intercom Integration

LAN

Acrobat

Digital Wireless Intercom

Partyline Intercom Integration

Interface for Digital Partyline

CAT / Coax

1

16

9   1

9   1

Performer C22

ARTIST Node
Mainframe 1
up to 128x128

ARTIST Node
Mainframe N
up to 128x128

SIP

SIP   WAN

SIP based
Telephone System

SIP   SIP

Connect IPx8

4Wire

ARTIST Node

Redundant Fiber
Optic Ring

PC User Level Control for PC Networks

Director   Director   Director

PC Network

AVB / AES-67

ARTIST Node
Mainframe 2
up to 128x128

CAT / Coax

ARTIST Node
Mainframe 3
up to 128x128

Virtual Key
Panel

WAN

Connect IPx2

2x CAT

LAN   Connect AVBx8

RSP 2300 Smartpanel

Riedel 5108 Panel

RiFace

Radio Interface

Connect Trio

POTS / ISDN / VoIP Interface

- 4 wire analog I/O
- AES3 inputs and outputs
- IFB outputs
- Foldback inputs
- GPI/O
- Camera intercom
- MADI
- VoIP (SIP, PABX)
- AVB
- TETRA Radios (Riedel Juggler)

PSTN

ISDN

WAN

3rd Party
IP Codecs

G.722 ISDN
Reporter Set

Commentary Panel

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TANGO

The Tango TNG-200 is Riedel's first fully-networked platform based on the AVB and RAVENNA/AES67 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 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 Riedel current and legacy Intercom panels, including the new 2300 Smartpanel, 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.

Riedel's Tango TNG-200 is an efficient stand-alone solution and a perfect example of German Engineering. Shaped perfectly to your needs, Tango is the flexible platform for todays and upcoming standards in the broadcast, theater and event environment.

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 as well as 3D views for easy programming.

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My first Riedel – Intercom Application

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

„My First Riedel" Application for TNG-200

Matrix Size	40 × 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)
	4 stackable Functions per Key	Vox
	8 IFBs	4 Room Codes
Key Functions	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

Virtual Key Panel

WAN / LAN

Connect IPx2

Pulse

RiFace

Radio Interface

Performer
C3 Digital
Beltpack

Performer
C31 Split Box

LAN

Acrobat
Digital Wireless Intercom

CR-2

CW-2
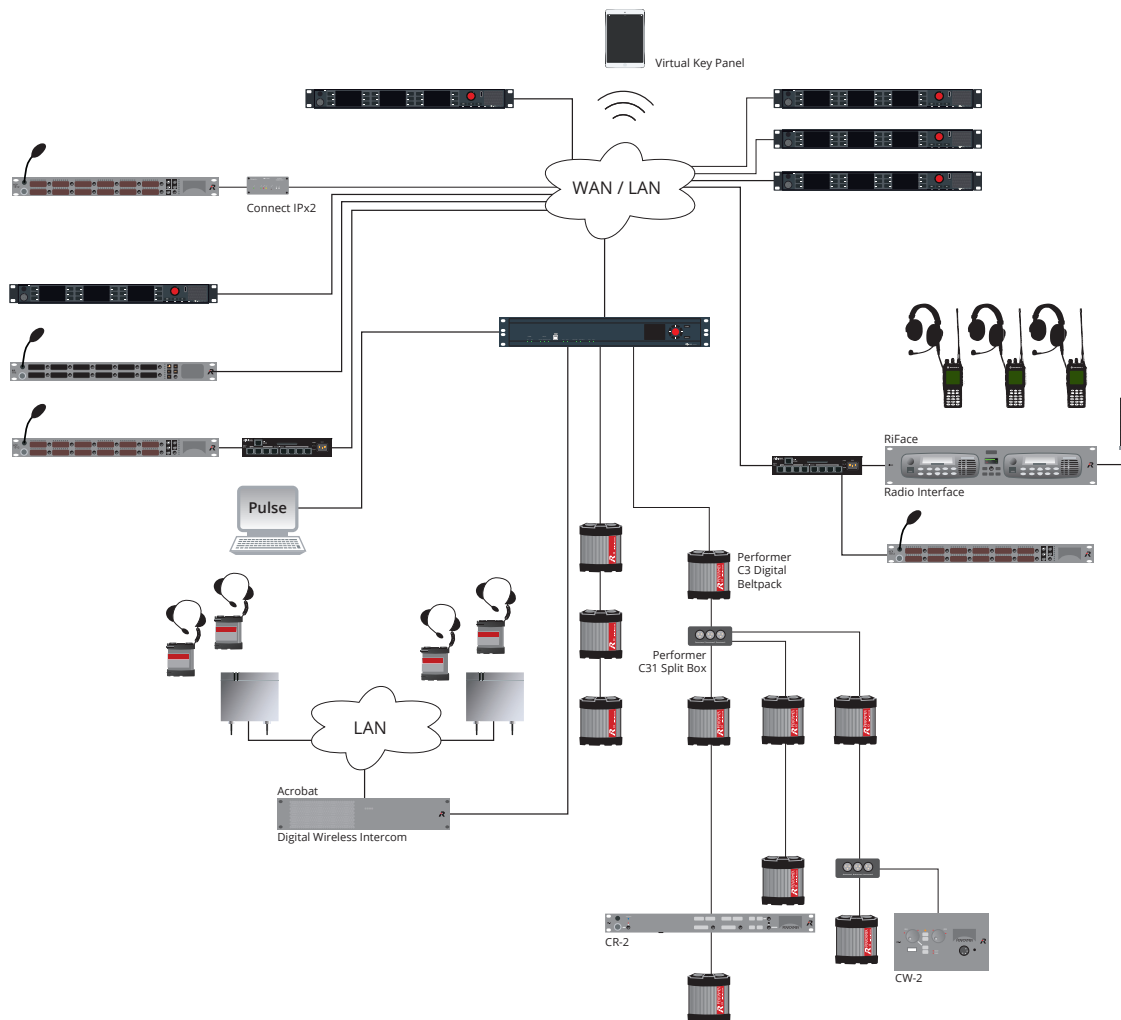
RIEDEL Intercom Panels –
The Easy-to-operate Key Panels

Whether you decide for the 1100 series panels, the classic 1000 series panels, the new 2300 series panels or any other Intercom panel: 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.

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 colour OLEDs. With 65,000 colours 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. An option slot for additional modules prepares the control panel for future technology developments.

1000 Series Panels

The 1000 series is the classic set of key panels from Riedel and is available in 19" rack-mount, desktop and modular (Danner) versions. All control key-panels feature bright, dimmable 8-digit alphanumeric in-key LED displays, individual rotary encoder 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 GPIs and three GPOs are available for system-wide programming as standard.

2300 Series Panels

The 2300 Smartpanel series is the world's first key panel designed as a powerful multifunctional user interface. The unique feature set includes high-resolution, sunlight readable, multi-touch color displays, 18 keys in 1RU, premium quality stereo audio, as well as a multi-lingual character set. The Smartpanel provides exchangeable headset connectors for mono or stereo applications, integrated power supply, low mounting depth, individual volume controls for each key, 2 USB ports, 2 Ethernet connectors, GPIO, Audio I/O, HDMI option slot, and removable gooseneck microphone. The feature set of this multifunctional user interface can be expanded by adding software applications.

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.

Suitable for:

Windows | Mac | ANDROID | iOS

Riedel Control Panels – Key Benefits

» Individual listen level control to adjust the listen level of each talk key
» Entirely digital connection to the matrix via AVB (prepared for AES67) or AES3/EBU (RJ-45 for CAT wiring and 75 ohm BNC connectors for coaxial video cables provided as standard)
» All connectivity options offer a second audio channel, which allows the panel to transport broadcast quality audio in addition to the intercom application
» Panels can be routed through any AES3/EBU audio routing environment
» 3 GPIs and 3 GPOs for system-wide programming
» Two sets of balanced line level audio inputs and outputs
» Ultra-compact design with integrated power supply and a recessed depth.
» Smart panel feature set

Features	1100 Series Panels	1000 Series Panels	2300 Series Smartpanels
Display type	exclusive multi-colour high-res 8 character OLED in-key displays	exclusive 8 character LED in-key displays	Display: 8 character, sunlight readable, high-res color TFT touch screen
Key type	exclusive keys with integrated display	exclusive keys with integrated display	push-button / touch screen
Support of horizontal and vertical mode	yes	yes	yes
Cross-point level indication for each key	yes	yes (LED)	yes
Individual listen level / on-off controls for each key	yes / yes (individual rotary control for each key)	yes / yes (individual rotary control for each key)	yes / yes
Shift-page to double the keys	yes	yes	yes
Function keys for fast operation	headset/panel mic, shift-page, F1, F2, options	headset/panel mic, shift-page, normalisation, options, beep	Headset / panel mic, mute, shift-page, menu
Digital connection to matrix	CAT, Coax / optional: Fiber, VoIP & AVB (prepared for AES-67)	CAT, Coax / optional: Fiber & VoIP	AVB (prepared for AES-67) / optional: VoIP, CAT, Coax
Balanced analog line level inputs / outputs	2x / 2x	2x / 2x	2x / 2x
GPI opto-inputs / relay outputs on DB9 connectors	3x / 3x	3x / 3x	3x / 3x
Slot for future option modules	yes	no	yes
Removable gooseneck microphone	yes	yes	yes
Front headset on 4-pin XLR	yes	yes	yes
Rear connector for external microphone / speaker	yes / yes	yes / yes	yes / yes
Built-in loudspeaker	yes	yes	yes
Integrated power supply	yes	yes	yes

Types	1100 Series Panels	1000 Series Panels	2300 Series Smartpanels
Rack-mount	RCP-1112; 12 keys; 19"/1RU; depth: 80mm / 3⅛"	RCP-1012E; 12 keys; 19"/1RU; depth: 56 mm / 2¼"	RSP 2318; 18 keys; 19"/1RU; depth: 78,5 mm
	RCP-1128; 28 keys; 19"/2RU; depth: 80mm / 3⅛"	RCP-1028E; 28 keys; 19"/2RU; depth: 56 mm / 2¼"	ESP 2324; 24 Keys; 19"/1RU; depth: 78,5 mm
	ECP-1116; 16 keys expansion; 19"/1RU; depth: 80mm / 3⅛"	ECP-1016E; 16 keys expansion; 19"/1RU; depth: 56 mm / 2¼"	
		ECP-1012ET: 12 keys expansion with keypad; 19"/1HE; depth: 56 mm / 2¼"	
Desktop	DCP-1116; 16 keys	DCP-1016E; 16 keys	
Modular		DIF-1000 / DPS-1000 Modular Panel Interface / Power Supply; 19"/1RU	
	DEM-1106; 8 keys Expansion Module (Danner)		
	DEM-1106D; 8 keys Expansion Module (DHD)	DBM-1004E; 4 keys Base Module (Danner)	
	DEM-1106L; 8 keys Expansion Module (Lawo)	DEM-1006E; 6 keys Expansion Module (Danner)	

Smart features	1100 Series Panels	1000 Series Panels	2300 Series Smartpanels
Intuitive touch screen control			yes
Bluetooth connectivity			yes (optional)
Stereo			yes
Exchangable headset connector			yes
Open platform			yes

Apps	1100 Series Panels	1000 Series Panels	2300 Series Smartpanels
Intercom			yes
Control			yes

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Intercom Goes Commentary:
Riedel Commentary Control Panel

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-res 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

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.

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 and 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.

RSP-2318 Smartpanel

Riedel's RSP-2318 Smartpanel is the world's first key panel designed as a powerful multifunctional user interface, that will enrich your user experience and change the way you communicate.

The unique feature set includes high-resolution, sunlight readable, multi-touch color displays, 18 keys in 1RU, premium quality stereo audio, as well as a multi-lingual character set, making this new Smartpanel the best in its class. Through apps, the feature set of this multifunctional user interface can be expanded.

Offering AVB and RAVENNA/AES67 connectivity as standard, and optionally AES3 over CAT/Coax (through the option slot), Riedel's RSP-2318 Smartpanel provides exchangeable headset connectors for mono or stereo applications, integrated power supply, low mounting depth, individual volume controls for each key, 2 USB ports, 2 Ethernet connectors, GPIO, Audio I/O, option slot and removable gooseneck microphone.

Developed to embody apps, including intercom, the RSP-2318 Smartpanel provides an intuitive and flexible user interface that can handle multiple tasks.

In the same ways that smartphones have enriched user experiences from traditional mobile phones, the Riedel RSP-2318 Smartpanel will bring your workflow to a whole new level.

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.

Riedel Smartpanel – Key Features

- » Open platform for applications
- » 18 keys
- » High-resolution, sunlight-readable displays
- » Individual volume control
- » Intuitive touch-screen UI
- » Integrated power supply

Riedel Smartpanel – Key Benefits

- » Compatible with all Riedel Intercom Matrix solutions
- » Expandable feature set
- » Universal Control Panel

What's a Smartpanel?

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

Front

High-Res TFT Display
- » High Contrast
- » Bright Colors
- » Sunlight readable

Touchscreen
- » Capacitive Touch
- » Individual Volume Control
- » Intuitive Menus

Data Entry Knob
- » Illuminated
- » Main Volume Control
- » Menu Data Entry

» USB Port

Exchangeable Headset Connector
- » Mono / Stereo
- » Legacy & new Headsets

» 18 keys in 1RU

Full-Range Speaker
- » Digital Speaker Equalization
- » High Power

Rear

GPI
- » 3 In / 3 Out
- » Sub-D 9

Matrix Connector
- » 2 x RJ-45
- » Redundant
- » AVB / RAVENNA / AES-67 / VoIP

Option Slot
- » User exchangeable
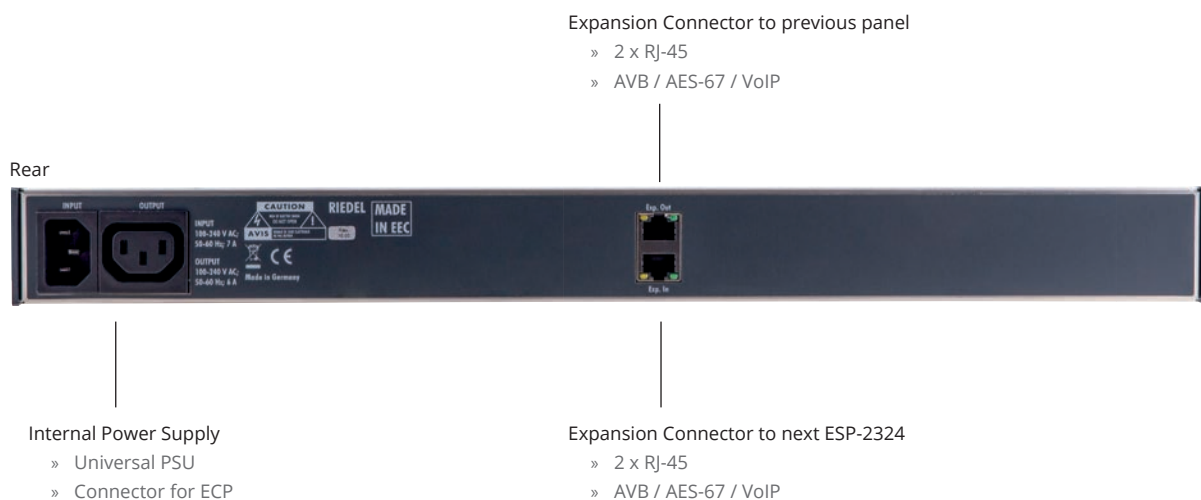- » CAT / COAX option

Headset Connector
- » 2 x RJ-45
- » Headset A/B

Internal Power Supply
- » Universal PSU
- » Connector for ECP

2nd USB
- » Bluetooth

Expansion Connector
- » RJ-45

» HDMI

» SDHC

Analog Audio
- » 2 x RJ-45
- » 2 x 4-Wire In/Out

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 (Installing Dimensions)
Weight	1.7 kg
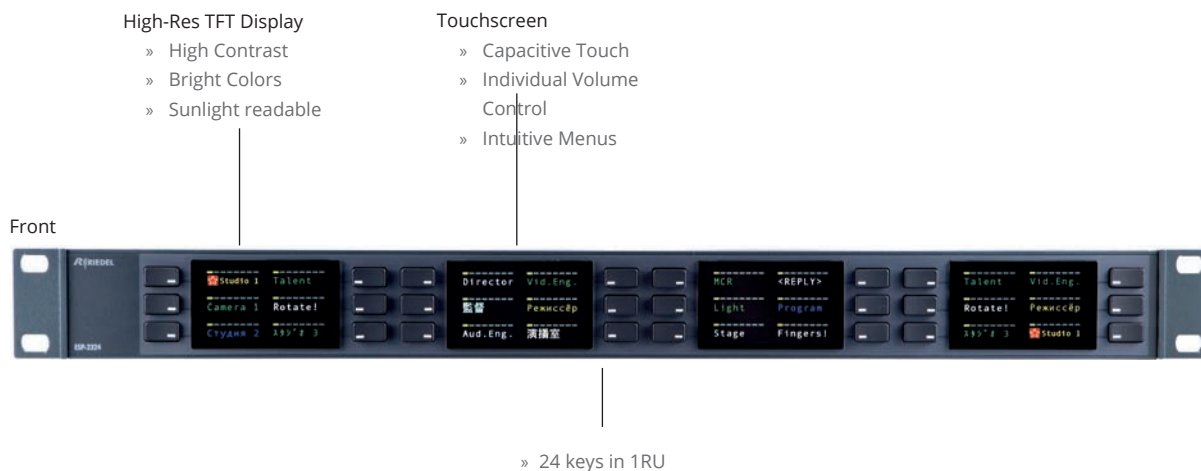
High-Res TFT Display
- » High Contrast
- » Bright Colors
- » Sunlight readable

Touchscreen
- » Capacitive Touch
- » Individual Volume Control
- » Intuitive Menus

Front

» 24 keys in 1RU

Expansion Connector to previous panel
- » 2 x RJ-45
- » AVB / AES-67 / VoIP

Rear

Internal Power Supply
- » Universal PSU
- » Connector for ECP

Expansion Connector to next ESP-2324
- » 2 x RJ-45
- » AVB / AES-67 / VoIP

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 (Installing Dimensions)
Weight	1.4 kg

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Smartpanel Apps

The RSP-2318 Smartpanel is now available with a choice of three intercom apps, each with a range of connectivity options to meet specific user requirements

With three editions of the intercom app for the Smartpanel, Riedel now provides exactly what customers need, allowing them to keep the costs low. With the new app concept, customers don't have to pay for features that they do not need. This new approach and the future apps, which Riedel will provide for the Smartpanel, will give customers maximum flexibility and will allow the RSP-2318 to become a powerful interface not only for intercom, but for many other applications.

Intercom App	BASIC	PLUS	PRO
Intercom Keys	12	12	18
Individual Volume Control	✓	✓	✓
Multi-touch Displays	✓	✓	✓
AVB	✓	✓	✓
AES67	✓	✓	✓
GPI (In/Out)	-/-	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	✓	✓	✓
Open for Add-Ons	✓	✓	✓

MediorNet Control App	
Control Apps	18
Audio I/O	34/34
Video I/O	34/34
Macros	34
Macro depth	100
Web UI for Configuration	✓
Panels per Network running MN Control	25
MediorNet 3rd party IDs	250
Expansion Panel	-
Shiftpage	✓
Panel Mic, Panel Speaker	still owned by Intercom App*
Flexible Upgrades	✓
Open for Add-Ons	✓

* if intercom and Control App are both licensed

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 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.
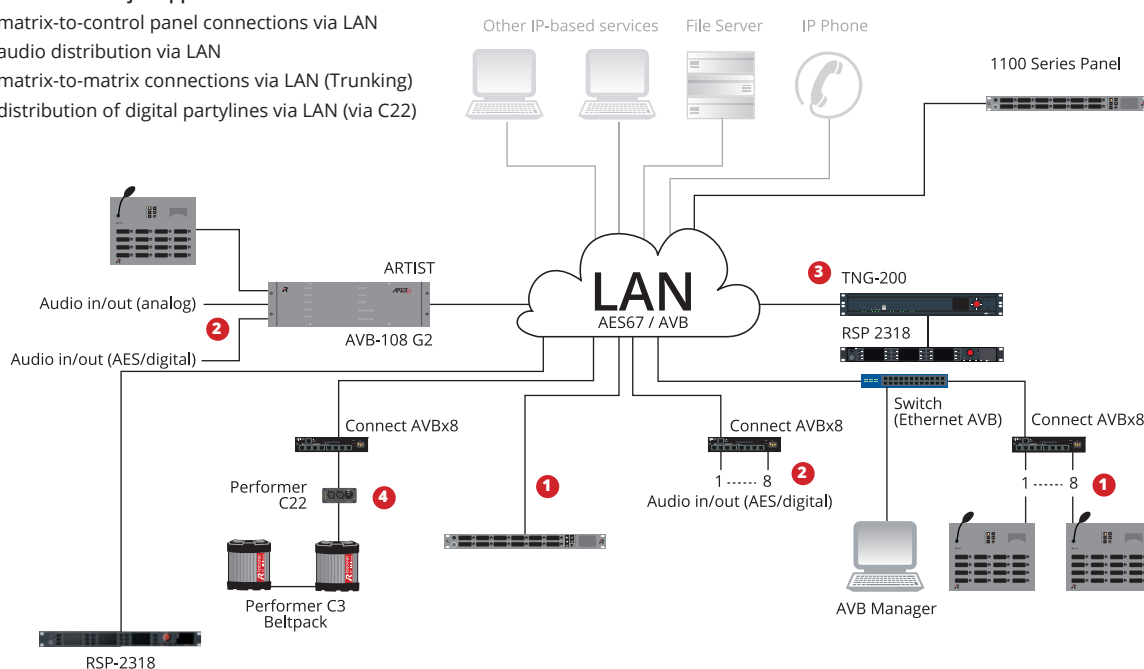
AVB Manager

Riedel's 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)

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Gigabit Ethernet Switch

The 24-port Gigabit Ethernet Switch, including AVB license, software and TAC service agreement provides highly resilient and secure network edge connectivity.

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*
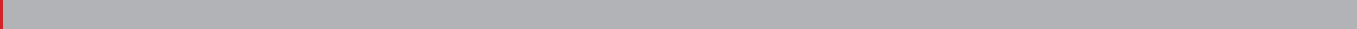
Connect AVBa8 Analog Interface

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

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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
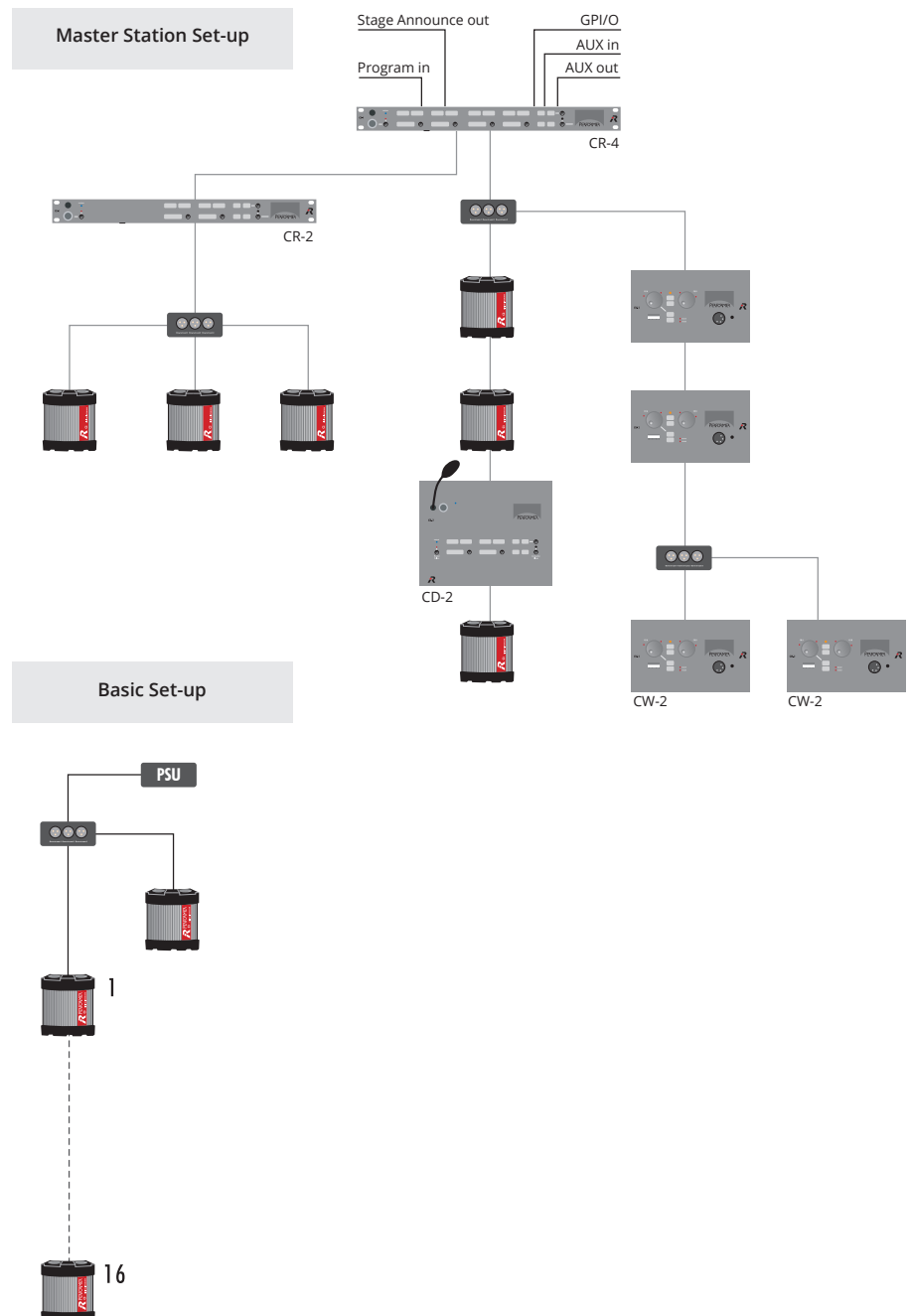- » Real plug-and-play installation

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 set-up 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 user interface provides the user 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 silence 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.
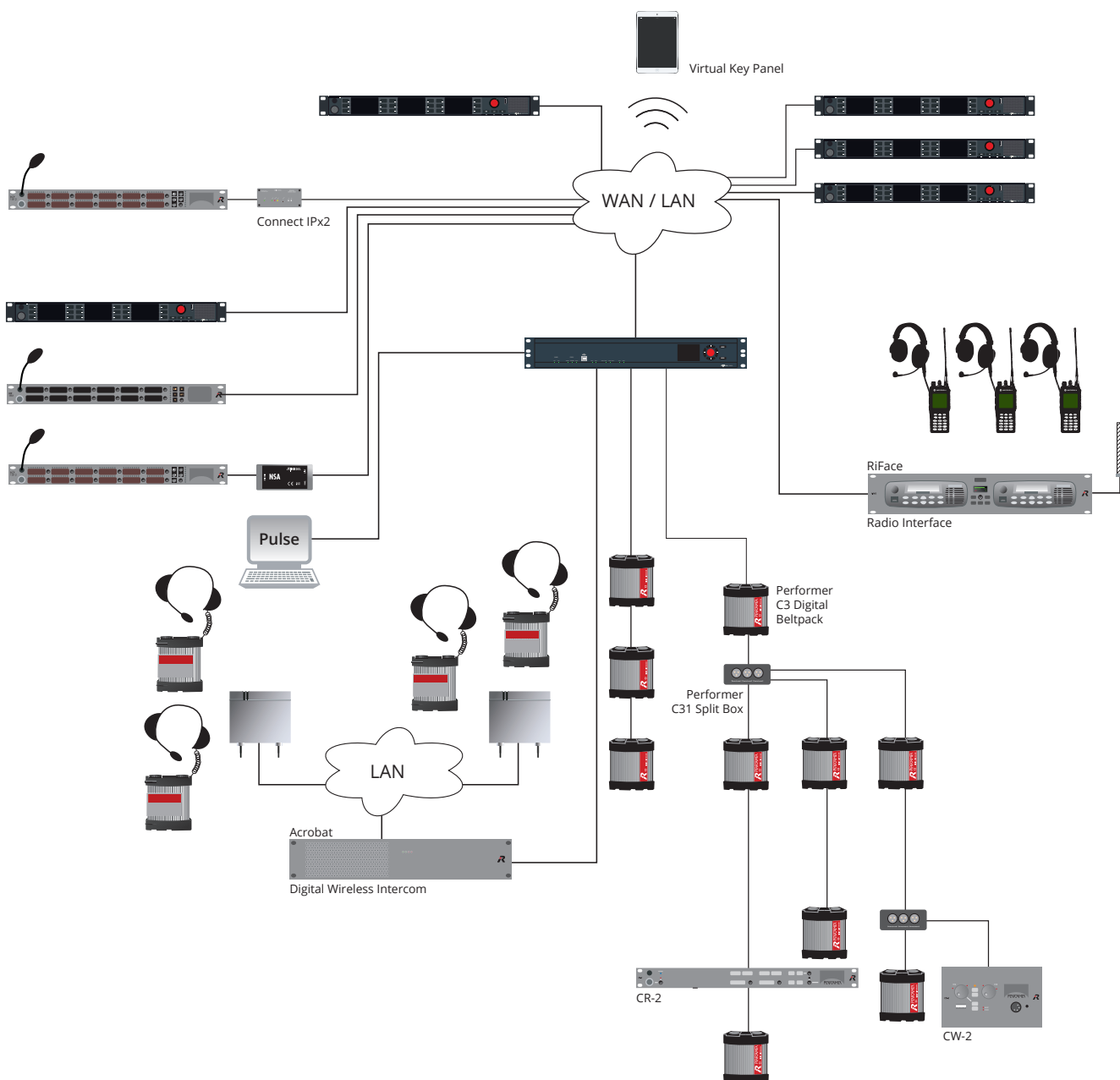
Performer C3 Digital Beltpack / Headset Station

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.

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

Whether used in stand-alone 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.

Master Station Set-up

Stage Announce out
Program in
GPI/O
AUX in
AUX out
CR-4
CR-2
CD-2
CW-2
CW-2

Basic Set-up

PSU
1
16

Matrix Integrated Set-up

Virtual Key Panel

WAN / LAN

Connect IPx2

Pulse

LAN

Acrobat
Digital Wireless Intercom

RiFace
Radio Interface

Performer
C3 Digital
Beltpack

Performer
C31 Split Box

CR-2

CW-2

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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.
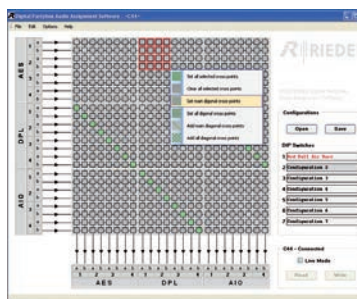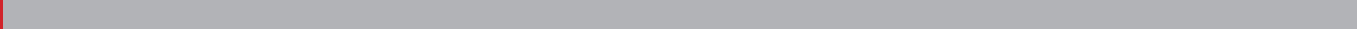
Performer CI31 Call Indicator

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.

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BOLERO
Digital Wireless Intercom Unlimited

Bolero, RIEDEL's game-changing new wireless intercom solution, is an expandable, full-roaming, DECT-based intercom system in the license-free 1.9GHz frequency range. Fully integrated into RIEDEL's Artist digital matrix intercom platform, Bolero offers a rich set of features and connectivity that can be applied three ways: as an exceptional wireless beltpack, as a wireless keypanel, and — in an industry first — as a handheld Walkie-Talkie.

Bolero runs over a standards-based AES67 IP network. Decentralized antennas connect to AES67 switches and then to Artist frames equipped with AES67 client cards, providing a fully integrated point-to-point intercom ecosystem with seamless roaming capabilities. To the system, the beltpacks look just like RIEDEL panels but are wireless, providing the highest levels of exibility and programmability.

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 audio bandwidth as other DECT-based systems. The codec has exceptional latency characteristics while being very efficient with processing power, providing excellent beltpack battery life, and saving DSP processing power for other functions.

Bolero features RIEDEL-exclusive ADR (Advanced DECT Receiver) technology, a diversity receiver technology specifically designed to reduce sensitivity to multipath RF refections, making the system useable in challenging RF environments where other systems have great difficulty.

Bolero incorporates Near Field Communication technology into both the beltpack and the active antenna. The user needs only to touch the beltpack to the antenna to complete the registration process.

The beltpacks support Bluetooth 4.1, 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 users can receive calls on their phone and talk and listen via their beltpack headset. Users can also make calls and then connect that person into the intercom matrix, eliminating the need for a telephone hybrid.

Based on RIEDEL's extensive rental experience, the beltpacks use a combination of premium materials, including high-impact plastics and rubber overmolds, to create a tough device with an ergonomic feel that provides easy use and handling. The display can be inverted so that it is readable in any orientation.

The beltpack itself features six buttons for each of the six intercom channels, plus a separate "Reply" button that easily facilitates a reply to the last channel that called. Finally, in an industry first, the beltpack can be used without a headset like a handheld Walkie-Talkie utilizing an integrated mic and speaker.

BOLERO – Key Benefits

- » Up to 10 beltpacks per antenna
- » 100 antenna, 100 beltpack system capacity
- » 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

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

Riedel-exclusive ADR receiver
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

Integrated mic and speaker
for headset-free operation

Can be used as a beltpack, a portable
desktop keypanel, or Walkie-Talkie

No registration headaches!
Touch the beltpack to the antenna and GO!

Tough, ergonomic, beltpack built to survive

Bottle opener – just in case!

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	AES256 Bit encryption
Line in	3.5mm jack, 20Hz to 20kHz
Talk Controls	4 pushbuttons + reply key + 2 handheld 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, Battery full, Battery good, Battery low, Belt pack registered
No. of Full-Duplex Audio Paths	6 with individual level control
Handheld Operation	Walkie-talkie mode
Vibrate Module	Vibrate indicates incoming Call or silent call is active
Internal Loudspeaker	Freq. <500Hz to >7kHz 80dB/SPL/0.5W/1m, @ <5% THD.
Remote Health Monitoring	Battery charge status, remaining time
Battery	Lithium Ion external removeable battery pack with user removeable clip
USB Charging	USB-2.1 Type C connector for firmware update and beltpack charging
Operation Time	~17 hours typical
Headset Connector	4-pin male XLR, user replaceable
Microphone Type	Electret (~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)
Bluetooth phone call mix into intercom	Yes
Lanyard anchor points	Yes
Environmental	IP65 sealing, dust tight + water jet from all angles
Storage Temperature	-20 to 70°C
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	2 hours
Charge status LEDs	1 per charge slot
Beltpack Display	% charged, time to full, temperature, battery health
USB Type A	USB-2.1, for firmware update and charging a Phone or beltpack via cable
USB Type C	USB Type C for firmware update and charging Phone or beltpack via cable
Power Socket	1x IEC
Power Supply	100-230VAC
Mounting	Stand-alone table mount, 2x wall mounts or 19" rack via optional accessory kit

ARTIST
Digital Matrix Intercom

PERFORMER
Digital Partyline Intercom

BOLERO / ACROBAT
Digital Wireless Intercom

INTERCOM
ACCESSORIES

HEADSETS

MOTOROLA

Antenna	Bolero Active Antenna (BL-ANT-1010-19G-xx)
No of Beltpacks per Antenna	10
RF Frequency Range	1.880 - 1.930GHz (region dependant)
RF Range	Indoor (structure dependent): ~200-400m Outdoor (Free line of sight): ~300-500m
Programmable Transmission power	Yes
Beltpack Registration	1 touch NFC & over the air
Network Connection	AES67 IP
Display Type	High contrast E-ink display
Power Supply	PoE+ (802.3at, type 2, class 4, 15-30W) or 8 to 57VDC
Power Consumption	13W
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	IP53 sealing; dust + water spray at up to 60° from vertical
Operational Temperature	-10 to 55°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)
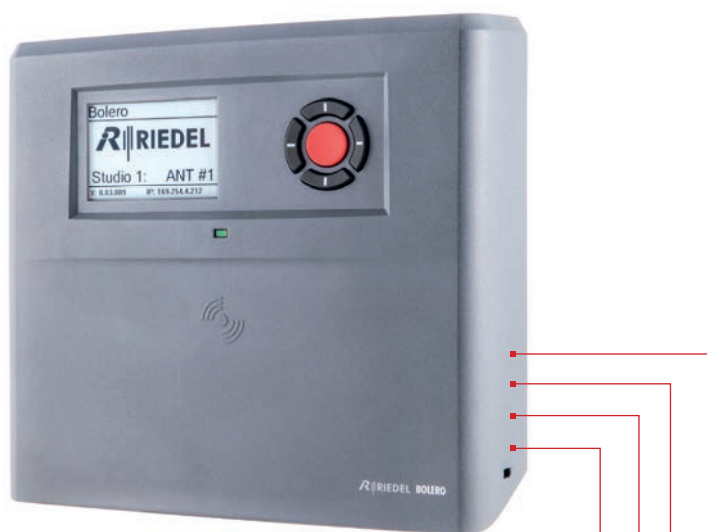
100 antennas per system = industry-leading
100 beltpack capacity per system

Intelligent use of bandwidth
results in 10 beltpacks per antenna

Standards-based, decentralized,
AES67 IP-networked antennas

Fully re-programmable FPGA
to handle future networks

ACROBAT
Digital Wireless Intercom Unlimited

The Riedel Acrobat Digital Wireless Intercom system is an easy to use full-duplex communications solution for broadcast, security, industrial and theatre applications as well as for sports and cultural events. Acrobat takes a completely new approach to wireless communications, pushing it beyond the limits of existing wireless intercom solutions.

Riedel Communications' Acrobat Digital Wireless Intercom solution utilizes the benefits of the Digital Enhanced Cordless Telecommunications (DECT) standard's base layer. This provides a license-free, cellular architecture with seamless hand-over between cells, allowing each Acrobat Wireless Beltpack to continuously monitor and automatically select the best connection to the Acrobat Cell Controller. Utilizing the DECT platform, Riedel has advanced the technology to deliver a highly flexible wireless intercom solution that really reflects the market's needs.
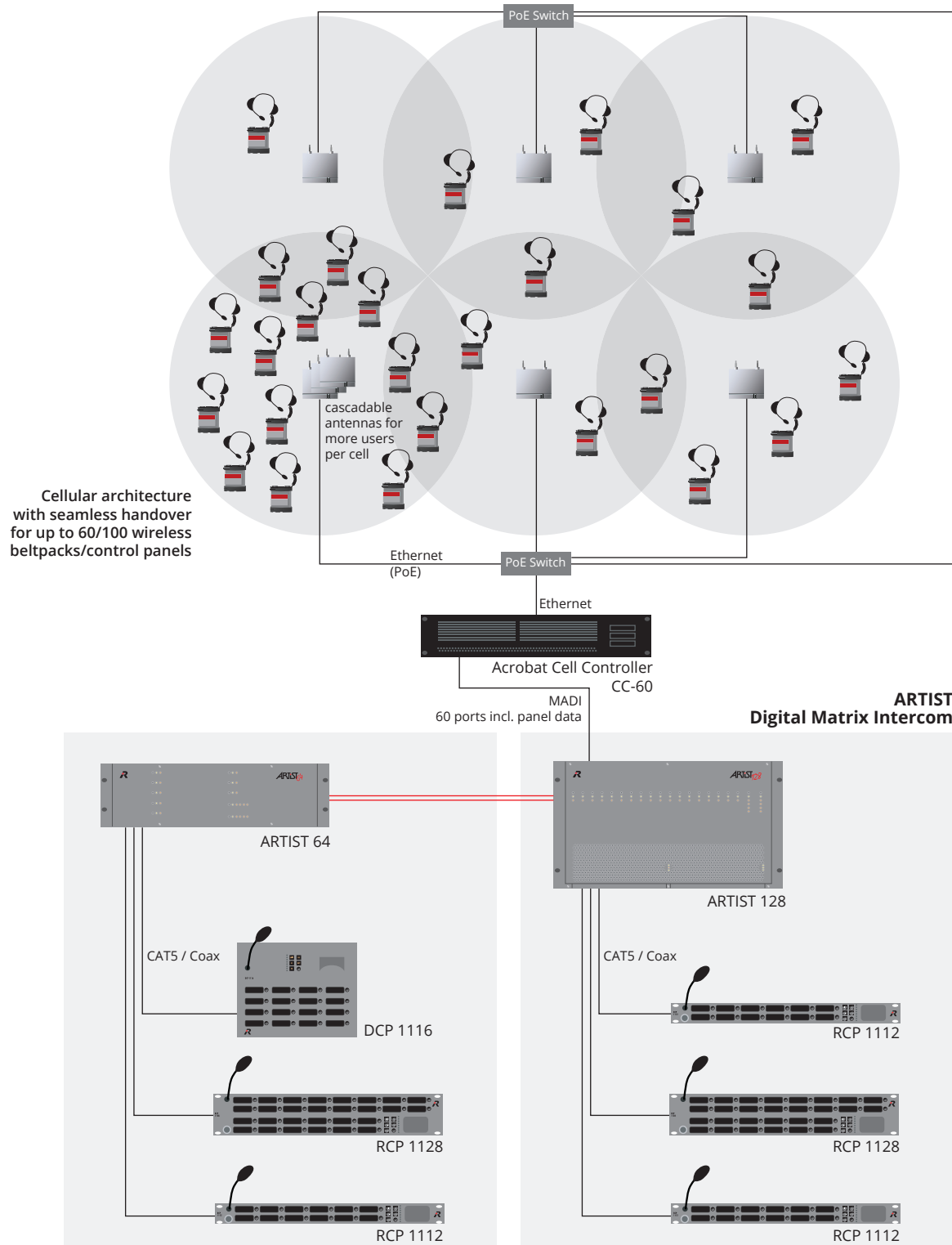
Depending on individual requirements, the Acrobat Digital Wireless Intercom can be set up as a wireless partyline system or as a point-to-point solution with all the extensive programming options known from the Artist Digital Matrix Intercom system. As a consequence Acrobat delivers a unique combination of improved performance with an optimal use of resources. Riedel's Enhanced Sync Automation (ESA) optimizes the system performance when used in environments with other DECT-based systems (e.g. telephones) by detecting them and managing the Acrobat system frequencies accordingly.

As a result, the new Acrobat Digital Wireless Intercom provides an expandable, full-duplex, licence-free intercom solution. The system is designed for both partyline and point-to-point communications and provides digital audio quality without interfering with UHF radio microphones or IEMs.
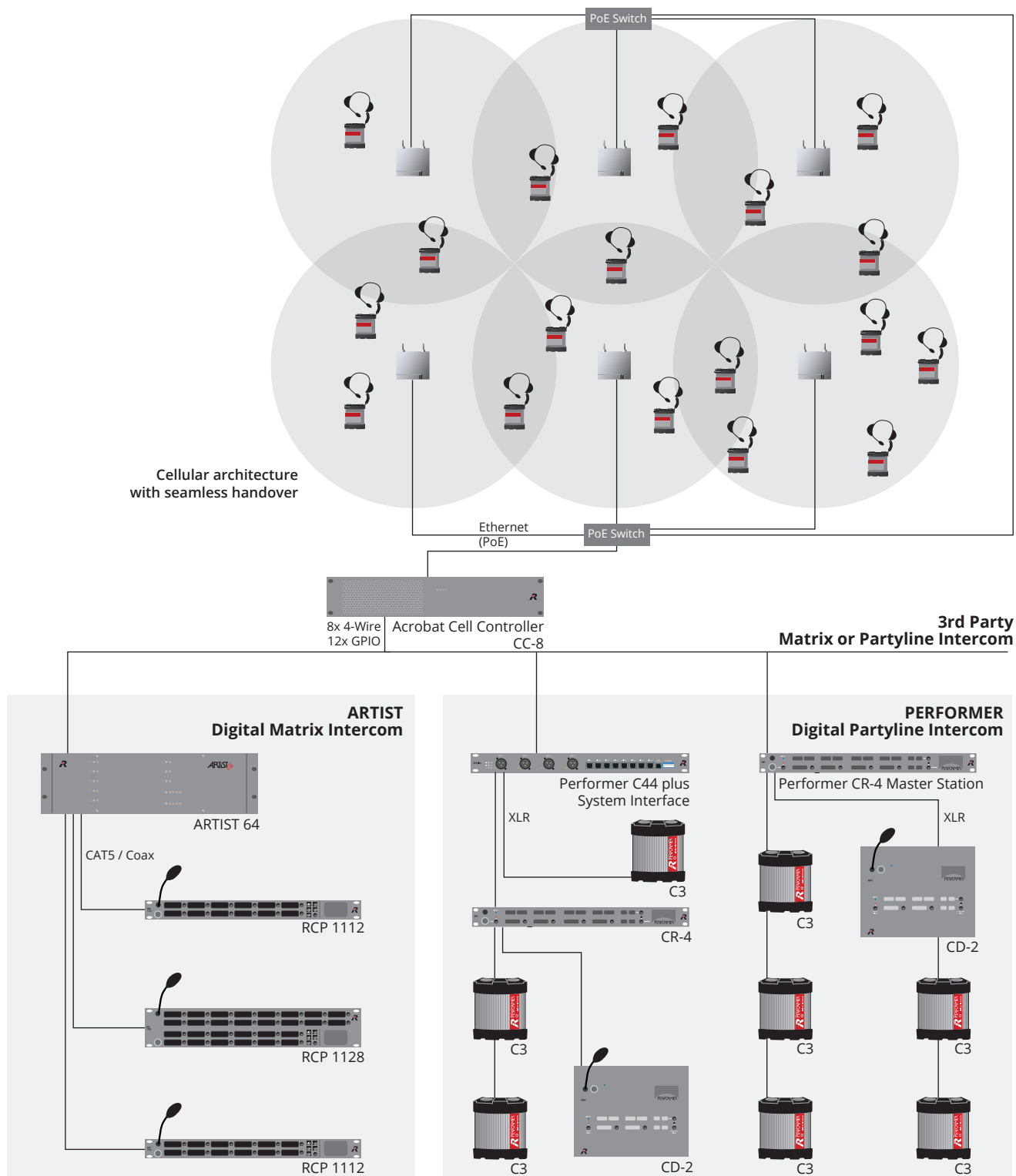
ACROBAT – Key Benefits

» Wireless partyline and point-to-point communications
» Up to 60/100 individually addressable Wireless Control Panels/Beltpacks (CC-60/CC-120)
» Up to 18 Wireless Partylines (CC-8)
» Excellent audio quality via VoIP-over-DECT technology (license-free worldwide)
» Cellular architecture with seamless hand-over
» Connection of antennas via existing Ethernet infrastructure (PoE)
» Enhanced Sync Automation (ESA)
» No interference with radio microphones, In Ear Monitoring (IEM) or other UHF systems

Installation of Acrobat CC-60/CC-120 System

PoE Switch

cascadable antennas for more users per cell

Cellular architecture with seamless handover for up to 60/100 wireless beltpacks/control panels

Ethernet (PoE)

PoE Switch

Ethernet

Acrobat Cell Controller
CC-60

MADI
60 ports incl. panel data

ARTIST
Digital Matrix Intercom

ARTIST 64

ARTIST 128

CAT5 / Coax

CAT5 / Coax

DCP 1116

RCP 1112

RCP 1128

RCP 1128

RCP 1112

RCP 1112

Installation of Acrobat CC-8 System

PoE Switch

Cellular architecture
with seamless handover

Ethernet
(PoE)

PoE Switch

8x 4-Wire
12x GPIO

Acrobat Cell Controller
CC-8

**3rd Party
Matrix or Partyline Intercom**

**ARTIST
Digital Matrix Intercom**

ARTIST 64

CAT5 / Coax

RCP 1112

RCP 1128

RCP 1112

Performer C44 plus
System Interface

XLR

C3

CR-4

C3

CD-2

C3

**PERFORMER
Digital Partyline Intercom**

Performer CR-4 Master Station

XLR

C3

CD-2

C3

C3

C3

C3

ACROBAT
System Components

Acrobat WB-2 – Wireless Beltpack / Headset Station

The Acrobat Wireless Beltpack is a light and compact, digital headset station with two individually configurable channels for intercom and IFB use. Operation is intuitive and follows the concept of Riedel's Performer C3 Digital Partyline Beltpack. Two large rotary level controls on top of the beltpack combine the talk-key and volume-control for each channel. Turning the controls adjusts the listen volume, pushing the controls toggles talk on/off with momentary or latching operation. Activation is indicated by a talk-LED, and a bright call light indicates an incoming call. The beltpack features a colour display which by default shows the labels for both talk-keys and two user-definable function keys. In addition, the display gives the user access to the intuitive configuration menu. The Acrobat wireless beltpack has an XLR connector for headset and a RJ45-port for firmware updates. A fully charged RB-2300 Rechargeable Battery allows for eight hours of operation. The rugged housing with rubber protectors houses the internal antenna.

Acrobat CA-6 – Cell Antenna

The Acrobat Cell Antenna is connected to the Acrobat CC-8 or Acrobat CC-60 Cell Controller via Ethernet, allowing the use of existing standard structured cabling and providing a wide area between Cell Controller and Antennas. The Cell Antenna is powered via Power-over-Ethernet (PoE), simplifying installations by eliminating local power-supplies. The Acrobat Cell Antenna has a range of approx. 330 feet (100 meters) under line-of-sight conditions.

Acrobat RB-2300 – Rechargeable Battery

The light and powerful rechargeable Lithium-Ion battery Acrobat RB-2300 provides the Acrobat Digital Wireless Beltpack eight hours of operation.

Acrobat BC-1000 / BC-6000 – Battery Charger

The Acrobat BC-1000 Battery charger safely and quickly charges a RB-2300 Battery (Acrobat BC-6000: six batteries).

Specifications Acrobat Digital Wireless Intercom

	Acrobat WB-2 Wireless Beltpack	Acrobat CC-8 Partyline Cell Controller		
Overall				
Operation frequency	1,880 – 1,930 MHz DECT* (license-free)			
Number of Beltpacks per Base Station/Antenna		18		
Number of Cell Antennas per Acrobat Cell Controller / Base Station		4x (max. 35 via external Ethernet switches; max. 2 cascaded)		
Number of partylines	2 per beltpack	18 per cell controller		
Beltpack-to-Beltpack / Beltpack-to-Base Station frequency response	100 Hz – 7.1 kHz	100 Hz – 7.1 kHz		
Single antenna range	approx. 100m line-of-sight (330 ft. line-of-sight)			
Microphone Preamp				
Mic input impedance	1 kOhm			
Dynamic mic input level	> -52 dBu @ 1 kHz			
Electret mic input level	> -38 dBu @ 1 kHz			
Headphone Amplifier				
Load impedance	32 – 600 Ohms			
Max. output power	255 mW / 600 Ohms			
Signal-to-noise-ratio	> 70 dB (A)			
Headset connector	1x XLR4M			
Connections				
MADI				
Analog 4-Wire		8x		
GPIO		12x		
Ethernet		4x PoE + 1x Config		
Power				
Power requirements	7.2 V DC	85 – 265 V AC / 47 – 63 Hz		
Power consumption	2.2 W (approx. 8 hours per battery)	120 VA		
Battery type	LiON			
Dimensions				
H x W x D	126 x 105 x 39 mm (5" x 4.1" x 1.5")	88 x 483 x 230 mm (2 RU x 19" x 9")		
Mass	580 g (1.27 lb / incl. battery)	2.4 kg (5.29 lb)		

* Russia: 1,880 – 1,900 MHz / USA: 1,920 – 1,930 MHz / Singapore: 1,880 – 1,900 MHz, 250 mW

ARTIST
Digital Matrix Intercom

PERFORMER
Digital Partyline Intercom

BOLERO / ACROBAT
Digital Wireless Intercom

INTERCOM
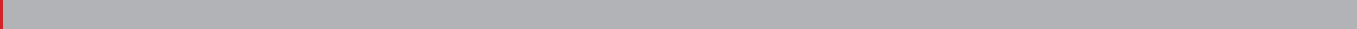ACCESSORIES

HEADSETS

MOTOROLA

Acrobat CC-8

Partyline Cell Controller / Base Station

The Acrobat Cell Controller serves as the heart of any Acrobat Digital Wireless Intercom installation. The device handles the VoIP-over-DECT cell management including cell synchronization, channel coordination, seamless handover as well as the audio coding and IP transfer. The 19"/2RU unit connects to any partyline or matrix intercom via eight analog 4-wire ports and 12 GPIOs. Four powered RJ45 Ethernet connectors for the direct connection of up to four Acrobat Cell Antennas complete the Cell Controller's interfacing. For further coverage up to 35 additional Cell Antennas can be connected via Ethernet network switches. The configuration of the Cell Controller is achieved via a web interface.

Acrobat CC-60/CC-120

Wireless Control Panel Controller / Base Station

The Acrobat CC-60 Wireless Control Panel Controller focuses on wireless intercom applications demanding for a matrix-like intercom approach. The 19"/2RU unit intelligently connects to Riedel Artist intercoms via MADI. The CC-60 can handle up to 60 Wireless Beltpacks / Control Panels (CC-120: 100 Wireless Beltpacks). Each beltpack uses one port in the Artist system and operates just like a wired 2-key Artist control panel. The beltpacks are configured via the Director configuration software. Each key can be configured with any function including call-to-, call-to.conference or even multiple commands per key. All audio and command processing is handled by the Artist system – the CC-60 provides the VoIP-over-DECT cell management including cell synchronization, channel coordination, seamless hand-over and the audio coding and IP transfer. The RJ45 Ethernet port can connect up to 100 Acrobat Cell Antennas via external PoE Ethernet network switches.

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Digital Wireless Intercom

SKYPE TX /
INTERFACES

HEADSETS

MOTOROLA

Riedel Skype TX

Riedel puts the world on the air over Skype. Riedel's STX-200 broadcast-grade professional Skype interface brings any Skype user worldwide into professional broadcast workflows. The reliable, 1 RU, single-box solution allows broadcasters to engage with both reporters and viewers in live programming.

The Skype TX Control software provides customers with the ability to manage multiple Skype TX channels from a single user interface. Other parameters that the software manages include stream resolution, aspect ratios, FPS, logo overlays, and various audio options. Riedel's STX-200 also offers unique device monitoring functions, such as temperature measurement and system status, that can be monitored by means of Simple Network Management Protocol (SNMP).

Licensed by Microsoft, the STX-200 offers broadcast-quality HD-SDI and balanced XLR audio I/Os. Previously, users relied on consumer PCs running common Skype clients that then needed to be integrated with scan and HDMI-to-SDI converters to produce content suitable for air. Further, audio dropouts and menu pop-ups on the live feed are avoided with this dedicated solution. Broadcast-grade audio interfaces include a two-channel balanced analog audio XLR input and output, as well as SDI embedded audio. Other features include a Gigabit Ethernet connection, a user-interface connection via DisplayPort, USB ports for accessories, and GPI/Os.

STX-200 – Features

- » Professional video interfaces
  - · 1 x SDI Input (SD/HD)
  - · 1 x SDI Output (SD/HD)
  - · 1 x Sync Input
- » Studio grade audio interfaces
  - · 2ch Analogue Audio XLR Input (balanced line level)
  - · 2ch Analogue Audio XLR Output (balanced line level)
  - · SDI embedded audio
- » AES67 optional Input / Output via RJ45
- » Gigabit Ethernet Connection
- » User Interface connection via Display Port Out
- » USB Ports for various accessories
- » GPIs
- » Enhanced SNMP monitoring
- » Robust housing for broadcast usage
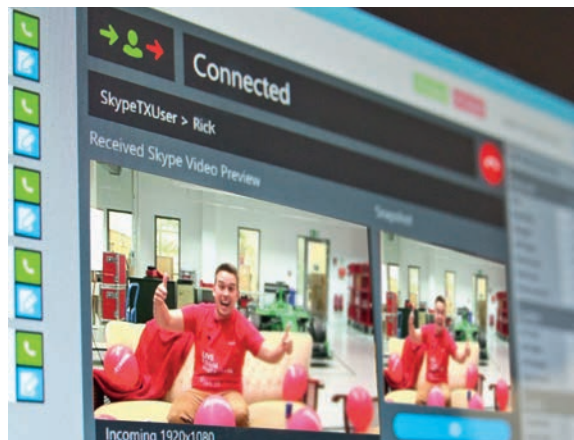
Network Interfacing

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

Connect Trio

ConnectTrio combines the following in one half-rack/1RU device: two independent analog POTS telephone hybrids; an ISDN BRI/S_0 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, where you would like to route the audio of digital partyline intercoms via an AES digital audio infrastructure such as with MediorNet, Artist or any 3rd party AES audio router solution.

ARTIST
Digital Matrix Intercom

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Digital Partyline Intercom

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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.
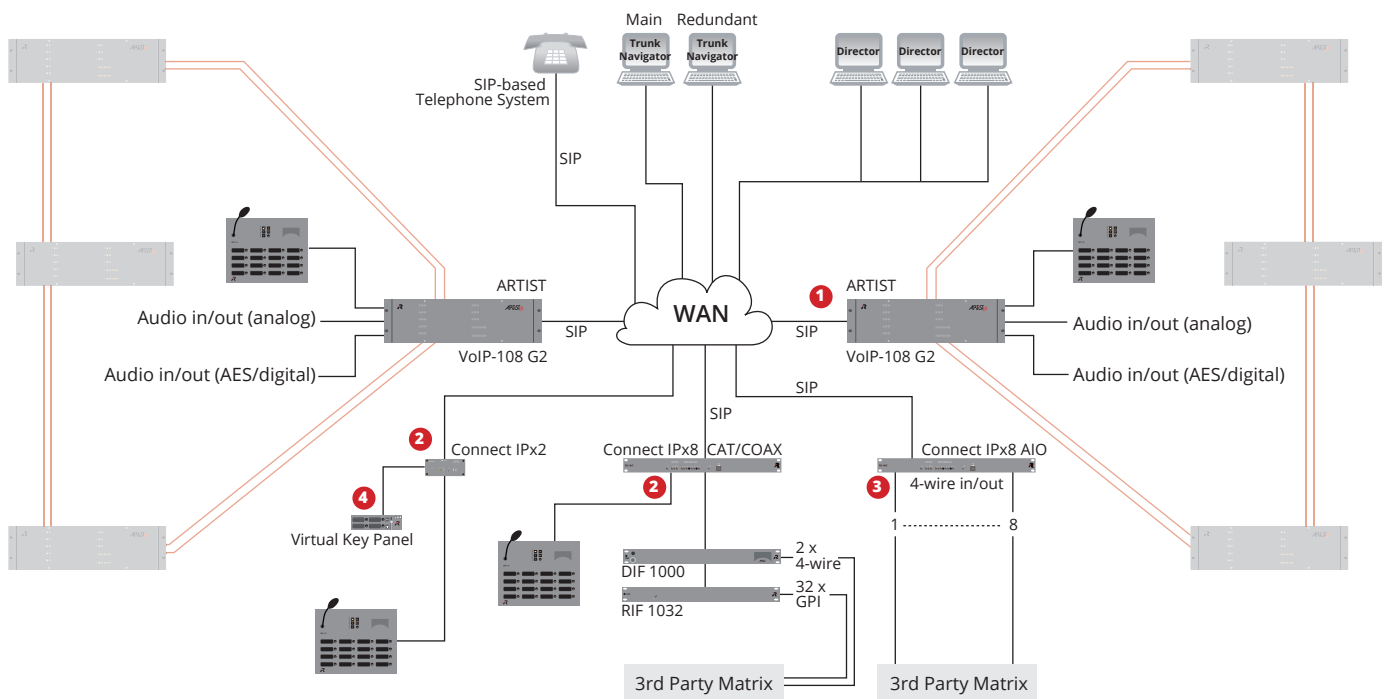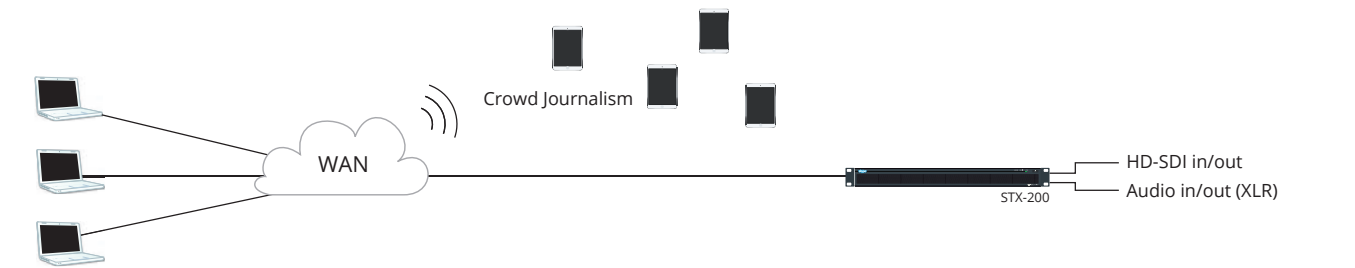
JUGGLER – System Overview

JUGGLER Artist Interface

MADI

Ethernet (VoIP)

TETRA Base Station Controller

TETRA Base Station

Ethernet (VoIP)
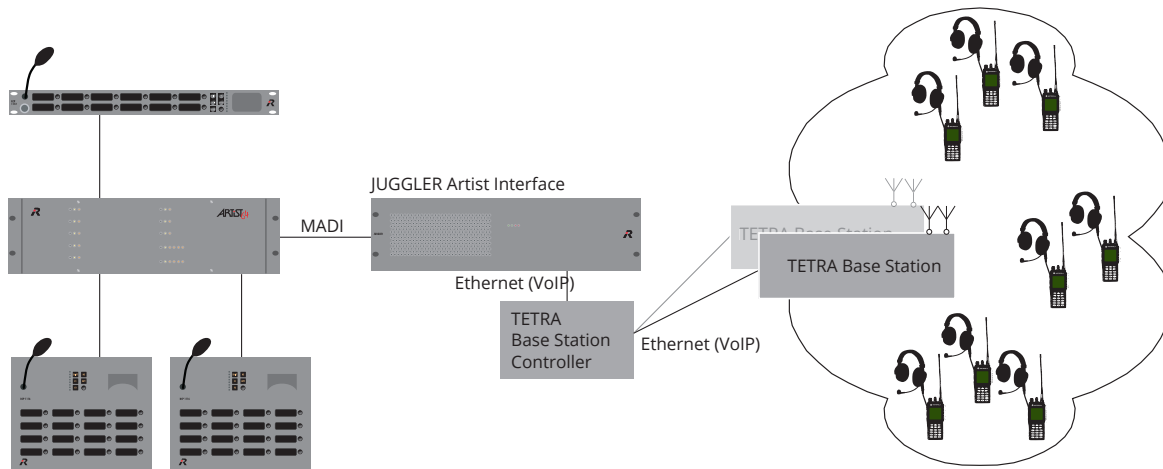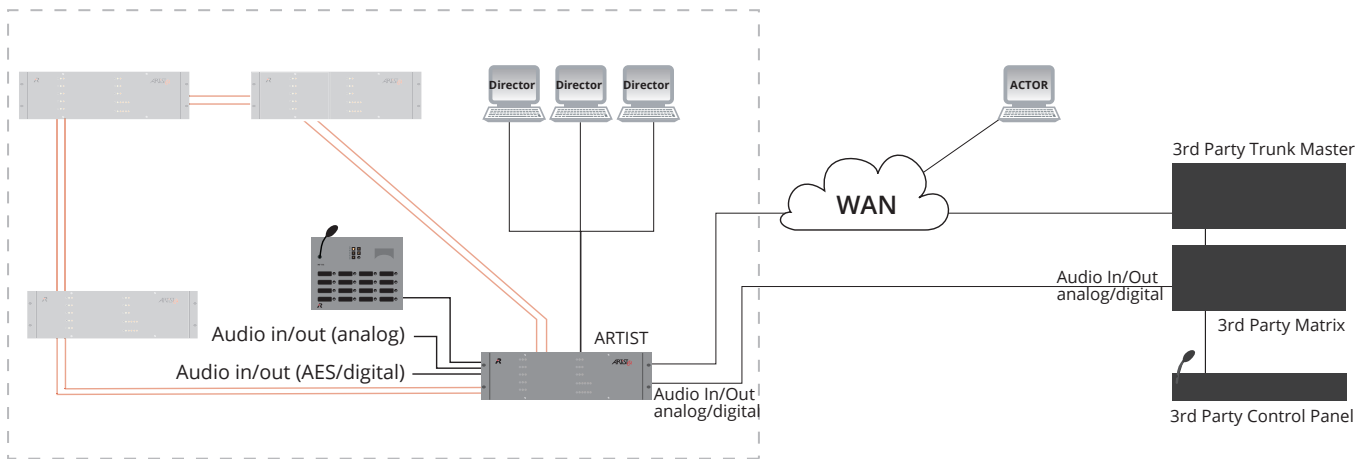
CONNECT IPx2 / IPx8 – System Overview

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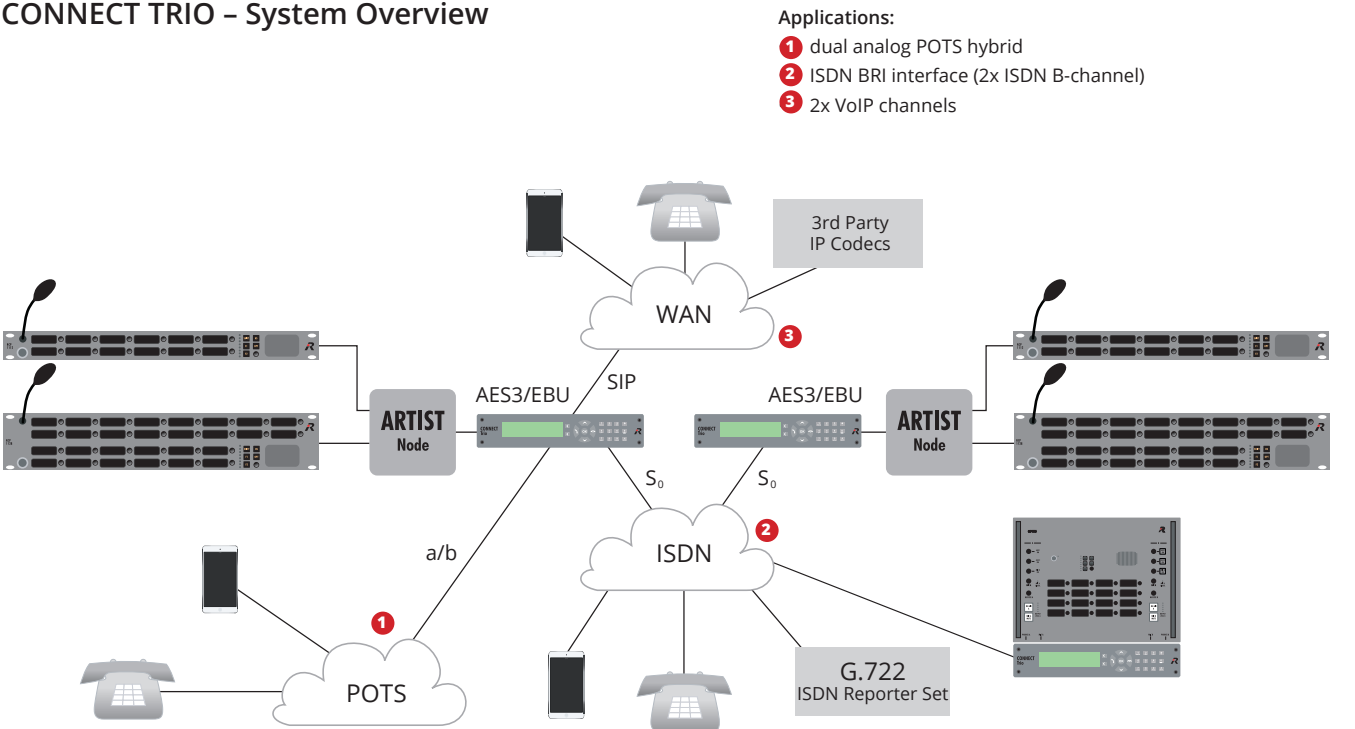4. matrix-to-virtual control panel connections

Main   Redundant

Trunk Navigator   Trunk Navigator

Director   Director   Director

SIP-based Telephone System

SIP

ARTIST

ARTIST

WAN

SIP   SIP

Audio in/out (analog)

Audio in/out (AES/digital)

VoIP-108 G2

SIP

SIP

VoIP-108 G2

Audio in/out (analog)

Audio in/out (AES/digital)

Connect IPx2

Connect IPx8 CAT/COAX

Connect IPx8 AIO

4-wire in/out

1 -------------------- 8

Virtual Key Panel

DIF 1000

2 x 4-wire

RIF 1032

32 x GPI

3rd Party Matrix

3rd Party Matrix

Skype TX – System Overview

Crowd Journalism

WAN

STX-200

HD-SDI in/out
Audio in/out (XLR)

ACTOR – System Overview

Director

Director

Director

ACTOR

WAN

3rd Party Trunk Master

Audio In/Out
analog/digital

3rd Party Matrix

Audio in/out (analog)

Audio in/out (AES/digital)

ARTIST

Audio In/Out
analog/digital

3rd Party Control Panel

CONNECT TRIO – System Overview

Applications:

1 dual analog POTS hybrid

2 ISDN BRI interface (2x ISDN B-channel)

3 2x VoIP channels

3rd Party
IP Codecs

WAN

3

ARTIST
Node

AES3/EBU

SIP

AES3/EBU

ARTIST
Node

S₀

S₀

a/b

1

ISDN

2

POTS

G.722
ISDN Reporter Set

ARTIST
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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 allow 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 achieved 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.
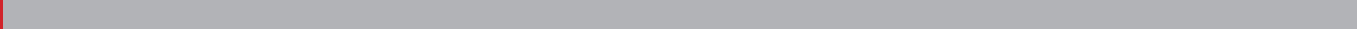

CPX-AVB

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.

ARTIST
Digital Matrix Intercom

PERFORMER
Digital Partyline Intercom

ACROBAT
Digital Wireless Intercom

INTERCOM
ACCESSORIES

HEADSETS

MOTOROLA

Comfortably functional... Headsets for Intercom & Radio Applications

As an intercom technology specialist, Riedel understands perfectly the specific demands and requirements of customers for intercom headsets. Headsets should be durable, light weight, small, comfortable and the cleaning and maintenance should be easy to manage. Riedel intercom headsets are a combination of optimal quality and reliable technology. Additionally, the headsets are completely 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.

Specifications

AIR Headset

Headphone	AIR (D1/D2)	AIR (E1/E2)
Transducer type	Dynamic, open	Dynamic, open
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)
Transducer type	Dynamic, closed	Dynamic, closed
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)
Transducer type	Dynamic, closed	Dynamic, closed
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

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

270° 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.
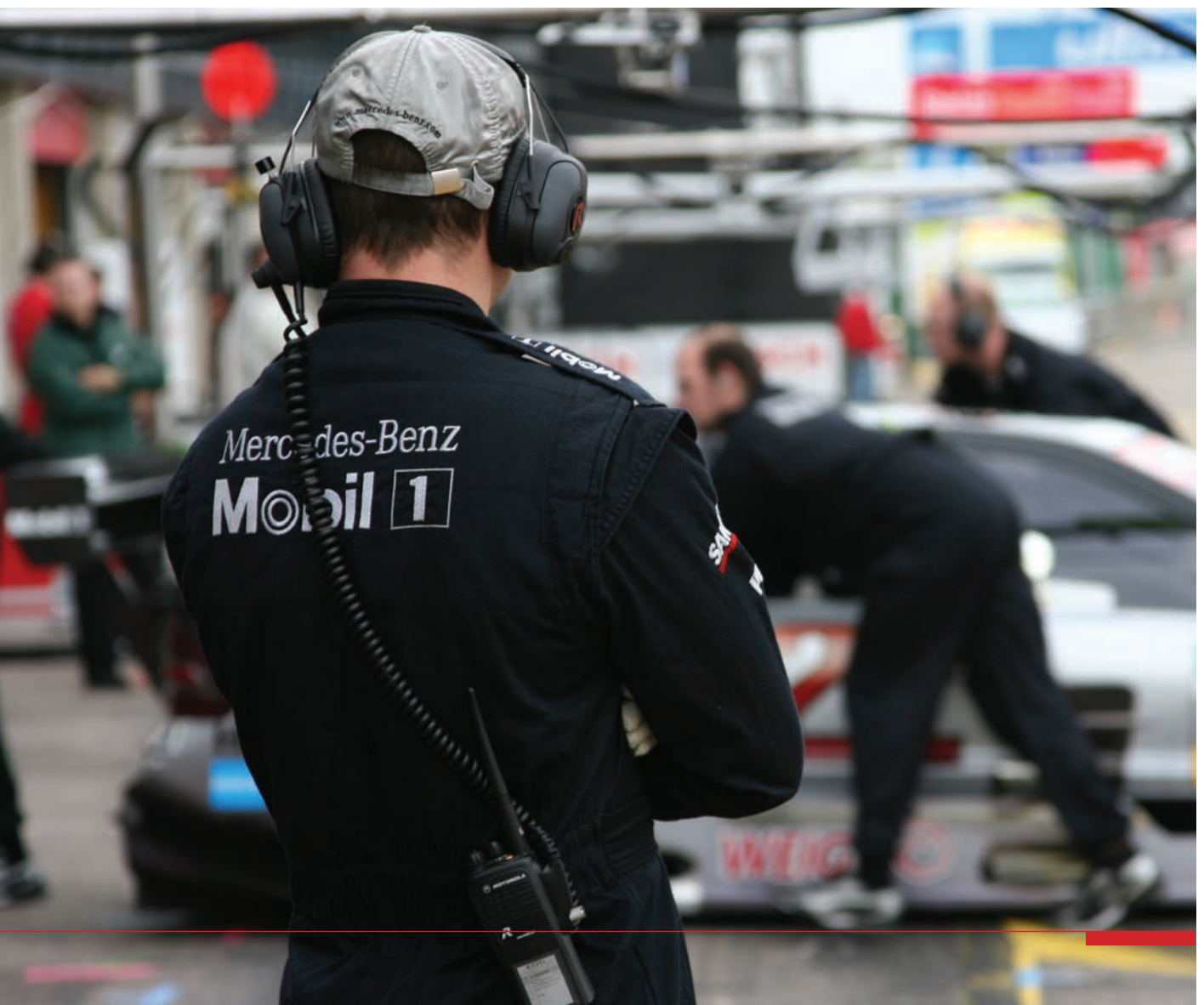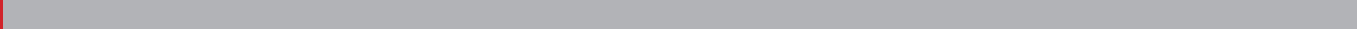
MAX – High Performance Headset

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

Customized Accessories

In addition to the AIR, PRO and MAX 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.

ARTIST
Digital Matrix Intercom

PERFORMER
Digital Partyline Intercom

ACROBAT
Digital Wireless Intercom

INTERCOM
ACCESSORIES

HEADSETS

MOTOROLA

PRODUCTIVITY plus Professional Service & Support to Increase Your Productivity!

The PRODUCTIVITY plus program is a set of Service Level Agreements (SLAs) designed to help you focus on what you do best: carrying out the most demanding productions. Centered around your individual needs and requirements, Riedel supports you in maintaining your competitive advantage. Servicing your technical installations is absolutely essential. With service and support from the people who know your Riedel products best, you can increase technical reliability, efficiency and productivity in order to generate more profit. PRODUCTIVITY plus provides expert service, support and training that you can't get anywhere else. Ten Riedel offices around the globe guarantee the support you've always been looking for.

With a PRODUCTIVITY plus Service Level Agreement you have access to a suite of exclusive services designed to increase your productivity and efficiency:

Information

As part of the PRODUCTIVITY plus program you have access to the latest information on all Riedel product lines. Technical newsletters keep you up to date with current software developments and provide operational tips that allow you to increase your productivity.

Hotline & Email Support

The PRODUCTIVITY plus program gives you access to a dedicated RIEDEL service hotline, providing expert support directly from the manufacturer. You can access our service engineers in your preferred way, be it via phone, Skype or email. Choosing between Silver, Gold and Platinum levels you can tailor your Service Level Agreement to exactly match your individual support needs.

Trainings

With PRODUCTIVITY plus you get technical trainings from the people who know Riedel products best. As you wish, training seminars are held at a Riedel office or directly at your facility. Gold and Platinum Level SLAs include one free day of training per year.

Update Service

The Update Service includes updates for all your Riedel products (Artist, Performer, Acrobat, MediorNet & RockNet). Gold and Platinum Level SLAs include a yearly on-site firmware update free of charge. Mobile installations can, of course, also be updated at the production site.

Installation Checks

Riedel engineers check your installation on site. The check includes a review of the installation of all system components, as well as the air ventilation concept, and cabling. Platinum Level SLAs also include a yearly on-site installation check free of charge.

On-site Support

In case of an incident that can't be solved over the phone, via email or using a remote desktop, a Riedel engineer will support you on site. Silver and Gold level SLAs include three incidents per year, Platinum level SLAs include five.

Maintenance

In the unlikely event that devices need to be repaired at Riedel's headquarters, the PRODUCTIVITY plus program provides guaranteed repair times and free loan equipment while your equipment is being repaired.

Just as Riedel products work hand-in-hand, thus providing an unparalleled degree of integration, the PRODUCTIVITY plus Service Level Agreements are based on an "all-in-one" policy. Every PRODUCTIVITY plus SLA covers all of your Riedel products. By choosing either Silver, Gold or Platinum levels you can tailor your SLA to fit your specific needs.
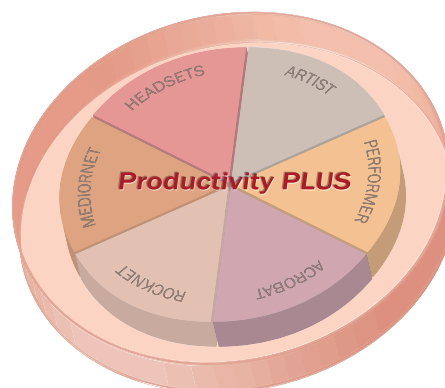
	PRODUCTIVITY PLUS Silver	PRODUCTIVITY PLUS Gold	PRODUCTIVITY PLUS Platinum
Information			
Technical Newsletter	●	●	●
Hotline & Email Support			
Silver Level Support (Mo - Fr, 9am - 5pm)	●		
Gold Level Support (Mo - Su, 9am - 5pm)		●	
Platinum Level Support (24/7)			●
Trainings & Services			
Training (1 day at a Riedel subsidary)	price on request[1]	●	●
Training (1 day on site)	price on request[1]	price on request[1]	●
Installation Check (1 day on site)	price on request[1]	price on request[1]	●
On-site Firmware Update (once yearly)	price on request[1]	●	●
On-site Support			
Response Time	≤48h[2]	≤48h[2]	≤24h[2]
Cost per day / days included	3 incidents / year	3 incidents / year	5 incidents / year
Maintenance			
Guaranteed repair time in Riedel office	≤10 working days[3]	≤5 working days[3]	≤2 working days[3]
Loan equipment during repair time / delivery time to customer	free of charge ≤72h[3]	free of charge ≤48h[3]	free of charge ≤24h[3]

[1] plus travel expenses
[2] plus time to obtain visa, etc, if required
[3] plus shipping time

www.riedel.net