BroaMan

Broadcast Manufactur

Operating Manual for Repeat48 / Repeat48WDM

Digital Video Network device

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BROAMAN GmbH
Lohenstr. 8
82166 Munich-Gräfelfing
Germany

BROAMAN Repeat48/Repeat48WDM
Operating Manual
Rev. 2.1

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Important Safety Instructions

- **Please read this operating manual carefully.**
- **Please keep this operating manual in a safe place.**
- **Heed all warnings.**
- **Follow all instructions.**
- **This device may only be used in accordance to the information provided in this operating manual. Ensure that all recommendations, especially the safety recommendations as detailed in this operating manual, are followed before and during the usage of the device.**
- **Do not use this device near water, for example, in humid or damp rooms.**
- **Clean only with a dry cloth.**
- **Do not block or cover any ventilation slits. Install the device in accordance with the operating manual.**
- **Do not install or place the device near a source of heat such as: radiators, power-amplifiers, or any other heat-producing equipment.**
- **Protect the power cord from being stepped on, crushed, pinched or damaged in any other way. Pay special attention to plugs and sockets of the device.**
- **Do not place this device on an unstable table, tripod, cart, etc. The device may fall, causing serious damage to the device.**
- **The device can be disconnected from the power supply by pulling the plug. These must be freely accessible at all times. The device should be disconnected during lightning storms or when unused for long periods of time.**
- **The device must be grounded; any disconnection of the grounding is not permitted.**
- **The internal components of the switched-mode power supplies operate at very high voltages. Coming into contact with them can lead to considerable electric shock, which may result in death.**
- **Only use attachments specified by the manufacturer.**
- **This device contains no user serviceable parts: only refer to authorised, qualified service personnel for any servicing.**
- **Your warranty will be voided if you tamper with the internal components.**

Owner Information

- **Operating Manual**

  Please read this manual. If you call for technical support, we will assume that you have already done so. Study the operating manual carefully in order to familiarise yourself with the device and its operation. The operating manual contains important information on proper use of the device.

  It cannot be guaranteed that this operating manual will not contain typographical mistakes or misprints. The operating manual is regularly revised and updated.

  Modifications, which serve the purpose of technical improvement of the device, may be carried out without prior notification.

- **Transport and Shipping**

  Always ensure careful handling of the device. The device should be transported and shipped in shock-absorbing transport cases. If these are not available, we recommend well-padded packaging such as the coated carton in which the device was delivered.

  We strongly advise against the use of light weight flight-cases without shock-absorbing rack-in-rack mounting.

- **Operational Environment**

  This device can be used in E1, E2, E3, E4, or E5 environments (as listed below) according to the harmonized European standards EN55103-1 and EN55103-2 “Electromagnetic compatibility – Product family standard for audio, video and audio-visual and entertainment lighting control apparatus for professional use”

  E1-Residental

  E2-Commercial and light industrial

  E3-Urban outdoors

  E4-Controlled EMC environment e.g. broadcast and TV-studio

  E5-Heavy industry

  The product is intended for the use in moderate climate.

- **Ventilation**

  Do not block or cover any ventilation openings. Install the device in accordance to the operating manual. Allow for sufficient space around the units (at least 200 mm ≡ 7,87" free space behind the rear-panel of the device) and make sure to allow for air circulation near the ventilation openings on both sides of the device. Keep the rear of the rack open during operation. Do not operate the device close to heat emitting equipment, such as power-amplifiers. Leave sufficient space (minimum ½ RU) between the device and any heat emitting devices housed in the same rack.

  A BroaMan Repeat48/Repeat48WDM may be placed on top or beneath other BroaMan products, without a space between the devices for up to 4 adjacent rack spaces.

Please note:
Do not populate more than 4 adjacent rack spaces with BroaMan devices.

Maintain 1RU of empty space between each 4 RU of BroaMan devices.

Keep the equipment rack open during operation.

Ensure air circulation around the devices.

Maintain at least 200mm (~8”) clearance behind the rear panel of the devices.

- **Water and Moisture etc.**

  To prevent fire or shock hazard do not expose the device to direct sunlight, dust, water or rain during operation or storage.

- **Cleaning**

  Only use a dry linen cloth to clean the device. If the unit is very dirty, moisten a cloth using a little water and a small amount of household detergent. Never use cleansing agents containing solvents to clean the device.

- **Operating and Storage Temperature**

  Operating temperature: -20°C …50°C ≡ -4°F … 122°F; ensure proper ventilation

  Storage temperature: -20°C …60°C ≡ -4°F … 140°F

- Power Supply

  The device can be disconnected from the power supply by unplugging the power cord. The power cords must be freely accessible at all times. The device should be disconnected during lightning storms or when the device is unused for a long period of time.

> **Important:**
> The switched-mode power supplies operate at very high voltages.
>
> Coming into contact with the power supplies can lead to considerable electric shock, which may result in death.

Never disconnect the main plug by pulling the cable. Always unplug the device.

Power-supply cords should be routed in such a way that they are not likely to be walked on, crushed, pinched, or damaged in any other way. Pay special attention to the plugs and the sockets of the device.

> **Important:**
> A damaged power cable must be replaced immediately.
>
> The device must be grounded. Disconnecting the ground is strictly prohibited. Ensure that the device is always grounded using the power connector.
> Do not cover the ground connection of the power connector with any kind of insulation material!

- **Fuse**

  There is no fuse in the device. The power supplies contain circuitry that protects the device from overload.

- **Lightning**

  For additional protection of this device during lightning storms, or when it is left unattended and unused for a long period of time, disconnect the power cord. This will prevent damage to the device due to lightning and power line surges. Disconnection from the mains power supply is only possible by disconnecting the power plug from the mains socket.

- **Eye Safety**

  This product is a Laser Class 1 product. It complies with IEC 60825-1, FDA 21 CFR 1040.10, and 1040.11.

- **External objects and/or liquids with the device**

  Never push objects of any kind into the device through openings in the casing. They may come into contact with dangerous voltage points or short out parts that could result in fire or electric shock. Never spill liquid of any kind on the device.

- **Cables and Accessories**

  Only use attachments that are specified by the manufacturer of the device.

  Use high quality, properly terminated, cables to connect the device. The device should only be used with optical fibre cables that are specified for use with the devices' optical transceivers and within the specified power budget of the optical transceivers. When not in use, ensure that the optical connectors on the device and the optical fibre cables are covered with the provided caps.

  Do not place this device on an unstable table, tripod, cart, etc. The device may fall, which can cause injury and serious damage to the device. Any mounting of the device should follow the manufacturer's instructions, and should use mounting accessories recommended by the manufacturer of the device.

- **Servicing**

  Do not attempt to service the device by yourself.

  The device contains no user serviceable parts, components or controls. The operation of an opened device is not permitted. Such operation can lead to damage of the device's components due to lack of air-flow through the device.

  The device may not be serviced, altered or modified without authorization from Broaman or an Broaman authorized distributor / dealer. Only qualified service personnel may carry out repair and maintenance work on the device. The warranty of the device will be voided if any unauthorized maintenance or repair work has been carried out.

CE/FCC-ConformityThis document confirms that the product Repeat48 bearing the CE (Communauté Européenne*)* label meets all requirements in the EMC directive 2004/108/EG laid down by the Member States Council for adjustment of legal requirements. Furthermore the product complies with the rules and regulations of the low-voltage directive 2006/95/EG and the Restriction of Hazardous Substances Recast Directive 2011/65/EU (RoHS 2). This product bearing the CE label complies with the following standards, ratified by CENELEC (Comité Européen de Normalisation Electrotechnique):

Electromagnetic compatibility – Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use

EN 55103-1, Emission
EN 55103-2, Immunity

EN 60065, Safety requirements

FCC notice
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Broadcast Manufactur GmbH could void the user's authority to operate this equipment.

Industry Canada Compliance Statement
This Class[A] digital device complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada
Cet appareil numérique de la class[A] est conforme à la norme NMB-003 du Canada.

The authorised declaration and compatibility certification lies with the manufacturer and can be viewed on request. Responsible as manufacturer is:

Broadcast Manufactur GmbH, Lohenstr. 8, 82166 Munich-Gräfelfing, Germany

Represented by Marc Brunke, Technical Director

N.B. The awarding of the CE label confirms the compliance with legal directives issued for the manufacturer and marketing of electronic and electrical devices. As such the CE label is not a "seal of quality" but rather proof that the device bearing the CE label is conform with the electromagnetic compatibility standards laid down in the above named testing regulations.

Munich, 01.03.2012

Marc Brunke

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Repeat48/Repeat48WDM – Digital Video Network repeater

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Device Description

Congratulations on your purchase of a Repeat48/Repeat48WDM - SD/HD/3G-SDI and AES10/MADI electrical-optical-electrical converter. The Repeat48/Repeat48WDM manual, accompanied with the device's configuration sheet and DiViNe system manual, will quickly demonstrate the advantages of the device and help ease your day to day workload in the broadcast and professional audio visual industry.

DiViNe, the Digital Video Network, provides scalable, protocol independent, routing, repeating, transport and distribution of multiple professional video signals, such as SD/HD/3G-SDI, over optical fibre.

Complete DiViNe systems are built from a collection of modules that include; coaxial and optical I/O, routers, repeaters, and optical multiplexers. Using the modular DiViNe building blocks, any system configuration can be realized.

DiViNe systems are specified and built to provide an application engineered solution, tailored to the requirements of the customer. The modular nature of DiViNe paves the way for construction of fully cost optimized systems.

Repeat48/Reepeat48WDM is an application engineered electrical-optical-electrical converter for 3G/HD/SD-SDI or AES10/MADI signals, converting between coaxial and optical connections.

Repeat48/Reepeat48WDM can be populated with up to 12 dual channel 3G/HD/SD-SDI or AES10/MADI modules and SFP fibre optic transceivers at the time of manufacturing.SFP modules can be swapped easily after delivery as well.

Repeat48WDM is equipped with built in passive multiplexing and de-multiplexing WDM, CWDM or DWDM modules. It can equipped with up to 16 simplex LC fibre ports for external WDM, CWDM or DWDM connectivity.

Repeat48/Reepeat48WDM is equipped with a built-in redundant power supplies with an automatic switchover or optionally with a DC input PSU(s).

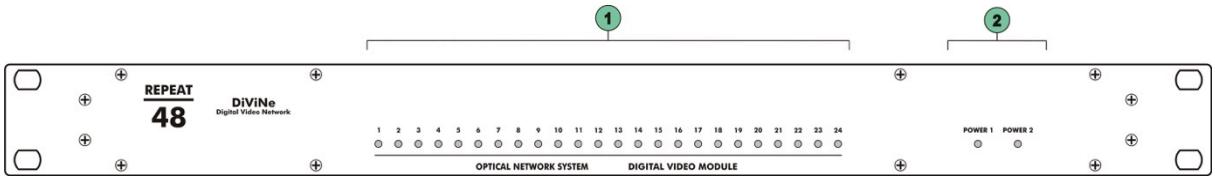
The front panels of the Repeat48/Reepeat48WDM units are identical, independent of the hardware configuration. The layout of the rear panel is dependent upon the configuration of the device.

Please note:
Refer to the DiViNe System Manual for system specifications and functionality.

Refer to the device's configuration sheet for configuration of the Repeat48/Repeat48WDM.

Front Panel

Repeat48 and Repeat48WDM

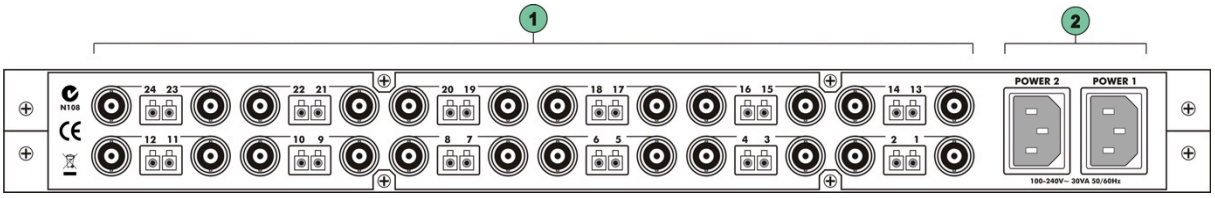


1 **Input status LED:** Signal indicator for channels 1-24:
LED ON: Signal is present
LED OFF: No signal is present

2 **PWR 1 LED:** Green: Power supply 1 is operational and receiving power
PWR 2 LED: Green: Power supply 2 is operational and receiving power

Rear Panel

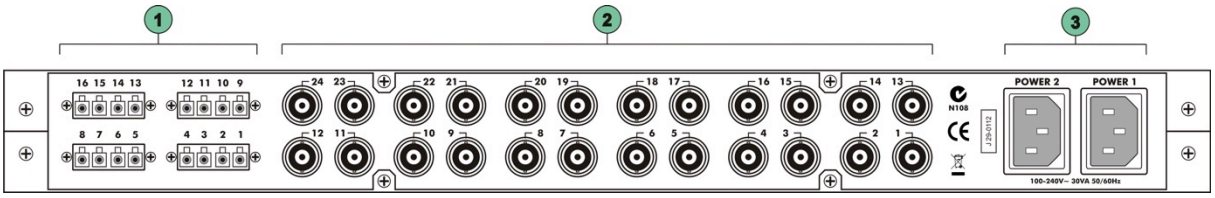
Repeat48



1 **Coax to fibre ports 1-24:** Populated with up to 12 Dual channel electrical-optical-electrical 3G/HD/SD-SDI or AES10/MADI modules.
Each port can be configured by the manufacturer as:
• Input
• Output

2 **POWER 1 and 2:** AC input for power supply 1 and 2 (100 … 240 V)
Optionally: DC input for power supply 1 and 2 with 4 pin XLR Male (8 …18V)

Repeat48WDM



1 **Fibre ports 1-16:** Up to 16 simplex LC fibre connections to internal WDM, CWDM or DWDM modules.

2 **Coaxial ports 1-24:** Populated with up to 12 Dual channel electrical-optical-electrical 3G/HD/SD-SDI or AES10/MADI modules.
Each port can be configured by the manufacturer as:
• Input
• Output
The coaxial ports are connected internally to SFP fibre transceivers that feed the specified WDM, CWDM or DWDM multiplexers.

3 **POWER 1 and 2:** AC input for power supply 1 and 2 (100 … 240 V).
Optionally: DC input for power supply 1 and 2 with 4 pin XLR Male (8 …18V)

Please note:
Refer to the DiViNe System Manual for system specifications and functionality.

Refer to the device's configuration sheet for configuration of the Repeat48/Repeat48WDM

Device Details

BNC Ports

Each pair of the twenty-four I/O ports can be equipped with a high quality BNC connectors, providing 3G/HD/SD-SDI or AES10/MADI connectivity.

Each 3G/HD/SD-SDI video port can be configured by the manufacturer as:
• Input with equalizer and an optional reclocker
• Output with an optional reclocker

Three types of Dual 3G/HD/SD-SDI modules are available for the Repeat48/Repeat48WDM:
• Input / Input
• Input / Output
• Output / Output

One type of AES10/MADI modules are available for the Repeat48/Repeat48WDM:
• Input / Output

Fibre Ports

Data from/to 3G/HD/SD-SDI or MADI coaxial interfaces are repeated to/from the SFP fibre ports.

The Repeat48WDM features internal SFP fibre ports that can be connected to internal WDM, CWDM or DWDM passive multiplexing module(s) as required for the application. External auxiliary connections to the multiplexer module(s) can be specified for connection to an external device such as an Ethernet switch or an Optocore network populated with single mode fibre transceivers.

Video Fibre Ports are configurable by manufacturer as:
• Input / Input
• Input / Output
• Output / Output

Multiplexers

Repeat48WDM can optionally be populated with passive WDM, CWDM or DWDM multiplexing module(s) as required by the application.

Power Supply

The device is optionally equipped with two power supplies and inputs. If the primary power supply were to fail, due to disruption of the power source or in the case of a power supply malfunction, the device will automatically switch over to the redundant power supply. In order to make the power supply to the device redundant, both power inputs must be connected to the mains supply, if possible to different phases, circuits, or by having one of the power supplies connected to an uninterrupted power supply (UPS).

The power supplies operate with mains voltage of 100 ... 240 V and frequency of 50 … 60 Hz. The device can be used throughout the world without any modifications or transformers.

Please note:
The switched-mode power supplies operate at very high voltages.

Coming into contact with the power supplies can lead to considerable electric shock, which may result in death.

To prevent electric shock, do not remove any covers of the device.

One or both of the AC power supplies can optionally be substituted with a DC-DC module allowing the device to be operated by 8-18V DC source, such as a battery or remotely over a hybrid cable.

Control

The Repeat48/Repeat48WDM is a plug-and-play device that does not any user control or configuration.

Connectors and Cables

3G/HD/SD-SDI and MADI Ports

Use 75 Ω coaxial cable with BNC connectors. Cables and connectors used should comply with SD/HD/3G-SDI and/or AES10/MADI interconnection standards. The maximum cable length is dependent on the bandwidth of the signal (AES10/MADI, SD, HD or 3G), the specification of the cable and connectors.

Please consult the device's configuration sheet for configuration of inputs and outputs.

Optical Connections

Each Repeat48 and Repeat48WDM two channel Electrical-Optical-Electrical module is populated with a SFP fibre transceiver with duplex LC connectors.

The Repeat48 features hot-pluggable SFP fibre transceivers that can be changed in the field.
The Repeat48WDM features internal SFP fibre transceivers populated at the time of manufacturing.

Please consult the device's configuration sheet for configuration of inputs and outputs.

Please note:
SFP fibre transceivers are application specific and must match the coaxial interface

Internal SFP transceivers must not be changed by the user.

Please contact the BroaMan technical support team for further information.

3G/HD/SD-SDI - Video:
Standard single mode transceivers connected using a 9 µm fibre cable can be used for applications requiring cable lengths of up to 10 km (dependent on bandwith and the quality of the optical cables).
Extended single mode transceivers connected using a 9 µm fibre cable can be used for applications requiring cable lengths of up to 80 km (dependent on bandwith and the quality of the optical cables).

AES10/MADI - Multichannel Audio:
Multi mode AES10/MADI transceivers connected using a 62.5 µm OM1 fibre cable (or better) can be used for applications requiring cable lengths of up to 2000 m (worst case).
Single mode AES10/MADI transceivers connected using a 9 µm fibre cable can be used for applications requiring cable lengths of up to 70 km (worst case).

Please note:
The BroaMan multi mode AES10/MADI transceiver is capable of receiving AES10/MADI from a Single Mode transceiver. Use a multimode fibre cable to connect between the single mode and multi mode AES10/MADI fibre transceivers.

For portable applications, such as touring and other temporary installations, ruggedized HMA Expanded Beam Connectors, mounted on 1 RU panels and portable cables on cable drums are available.
Please refer to the Product Brochure available at **www.BroaMan.com**.

Power Connection

For AC connection use power cords with IEC C13 connectors.
For DC connection use power cords with 4 pin XLR-Female connectors and maintain polarity.

Ordering Options

Below tables list the configurations available as a standard devices with unique ordering code. Please refer to the specific code when ordering.

BroaMan offers also custom versions of Repeat48/Repeat48WDM with different I/O number, more fiber AUX channels and special connectivity. To specify custom device please contact inquiry@broaman.com.

Repeat48-12

Code	Description
R4812002P	Repeat48-12 12 x 3G-SDI IN, 12 x fiber OUT, 2 x PSU
R4810022P	Repeat48-12 10 x 3G-SDI IN, 2 x 3G-SDI OUT, 2 x fiber IN, 10 x fiber OUT, 2 x PSU
R4808042P	Repeat48-12 8 x 3G-SDI IN, 4 x 3G-SDI OUT, 4 x fiber IN, 8 x fiber OUT, 2 x PSU
R4806062P	Repeat48-12 6 x 3G-SDI IN, 6 x 3G-SDI OUT, 6 x fiber IN, 6 x fiber OUT, 2 x PSU
R4804082P	Repeat48-12 4 x 3G-SDI IN, 8 x 3G-SDI OUT, 8 x fiber IN, 4 x fiber OUT, 2 x PSU
R4802102P	Repeat48-12 2 x 3G-SDI IN, 10 x 3G-SDI OUT, 10 x fiber IN, 2 x fiber OUT, 2 x PSU
R4800122P	Repeat48-12 12 x 3G-SDI OUT, 12 x fiber IN, 2 x PSU

Repeat48-24

Code	Description
R4824002P	Repeat48-24 24 x 3G-SDI IN, 24 x fiber OUT, 2 x PSU
R4822022P	Repeat48-24 22 x 3G-SDI IN, 2 x 3G-SDI OUT, 2 x fiber IN, 22 x fiber OUT, 2 x PSU
R4820042P	Repeat48-24 20 x 3G-SDI IN, 4 x 3G-SDI OUT, 4 x fiber IN, 20 x fiber OUT, 2 x PSU
R4818062P	Repeat48-24 18 x 3G-SDI IN, 6 x 3G-SDI OUT, 6 x fiber IN, 18 x fiber OUT, 2 x PSU
R4816082P	Repeat48-24 16 x 3G-SDI IN, 8 x 3G-SDI OUT, 8 x fiber IN, 16 x fiber OUT, 2 x PSU
R4814102P	Repeat48-24 14 x 3G-SDI IN, 10 x 3G-SDI OUT, 10 x fiber IN, 14 x fiber OUT, 2 x PSU
R4812122P	Repeat48-24 12 x 3G-SDI IN, 12 x 3G-SDI OUT, 12 x fiber IN, 12 x fiber OUT, 2 x PSU
R4810142P	Repeat48-24 10 x 3G-SDI IN, 14 x 3G-SDI OUT, 14 x fiber IN, 10 x fiber OUT, 2 x PSU
R4808162P	Repeat48-24 8 x 3G-SDI IN, 16 x 3G-SDI OUT, 16 x fiber IN, 8 x fiber OUT, 2 x PSU
R4806182P	Repeat48-24 6 x 3G-SDI IN, 18 x 3G-SDI OUT, 18 x fiber IN, 6 x fiber OUT, 2 x PSU
R4804202P	Repeat48-24 4 x 3G-SDI IN, 20 x 3G-SDI OUT, 20 x fiber IN, 4 x fiber OUT, 2 x PSU
R4802222P	Repeat48-24 2 x 3G-SDI IN, 22 x 3G-SDI OUT, 22 x fiber IN, 2 x fiber OUT, 2 x PSU
R4800242P	Repeat48-24 24 x 3G-SDI OUT, 24 x fiber IN, 2 x PSU

Repeat48WDM-12

Code	Description
R48W12002PA2	Repeat48WDM-12 12 x 3G-SDI IN, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W10022PA2	Repeat48WDM-12 10 x 3G-SDI IN, 2 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W08042PA2	Repeat48WDM-12 8 x 3G-SDI IN, 4 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W06062PA2	Repeat48WDM-12 6 x 3G-SDI IN, 6 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W04082PA2	Repeat48WDM-12 4 x 3G-SDI IN, 8 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W02102PA2	Repeat48WDM-12 2 x 3G-SDI IN, 10 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU
R48W00122PA2	Repeat48WDM-12 12 x 3G-SDI OUT, 1 x 1310nm AUX, 1 x Optocore Tunnel, 1 x COM, 2 x PSU

Repeat48WDM-24

Code	Description
R48W24002PA4	Repeat48WDM-24 24 x 3G-SDI IN, 2 x 1310nm AUX, 2 x COM, 2 x PSU
R48W22022PA4	Repeat48WDM-24 22 x 3G-SDI IN, 2 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W20042PA4	Repeat48WDM-24 20 x 3G-SDI IN, 4 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W18062PA4	Repeat48WDM-24 18 x 3G-SDI IN, 6 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W16082PA4	Repeat48WDM-24 16 x 3G-SDI IN, 8 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W14102PA4	Repeat48WDM-24 14 x 3G-SDI IN, 10 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W12122PA4	Repeat48WDM-24 12 x 3G-SDI IN, 12 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W10142PA4	Repeat48WDM-24 10 x 3G-SDI IN, 14 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W08162PA4	Repeat48WDM-24 8 x 3G-SDI IN, 16 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W06182PA4	Repeat48WDM-24 6 x 3G-SDI IN, 18 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W04202PA4	Repeat48WDM-24 4 x 3G-SDI IN, 20 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W02222PA4	Repeat48WDM-24 2 x 3G-SDI IN, 22 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU
R48W00242PA4	Repeat48WDM-24 24 x 3G-SDI OUT, 2 x 1310nm AUX, 2 x Optocore Tunnel, 2 x COM, 2 x PSU

Connection Example

This example shows the connection between two standalone Repeat48-12 units and one Repeat48-24. The center Repeat48-24 is configured with 6 dual 3G-SDI input modules (12 channels) and 6 dual 3G-SDI output modules. The top device is configured with 6 dual 3G-SDI input modules and the bottom device is configured with 6 dual 3G-SDI output.

Each device is connected with six dual-core single mode fibre cables to the central unit.

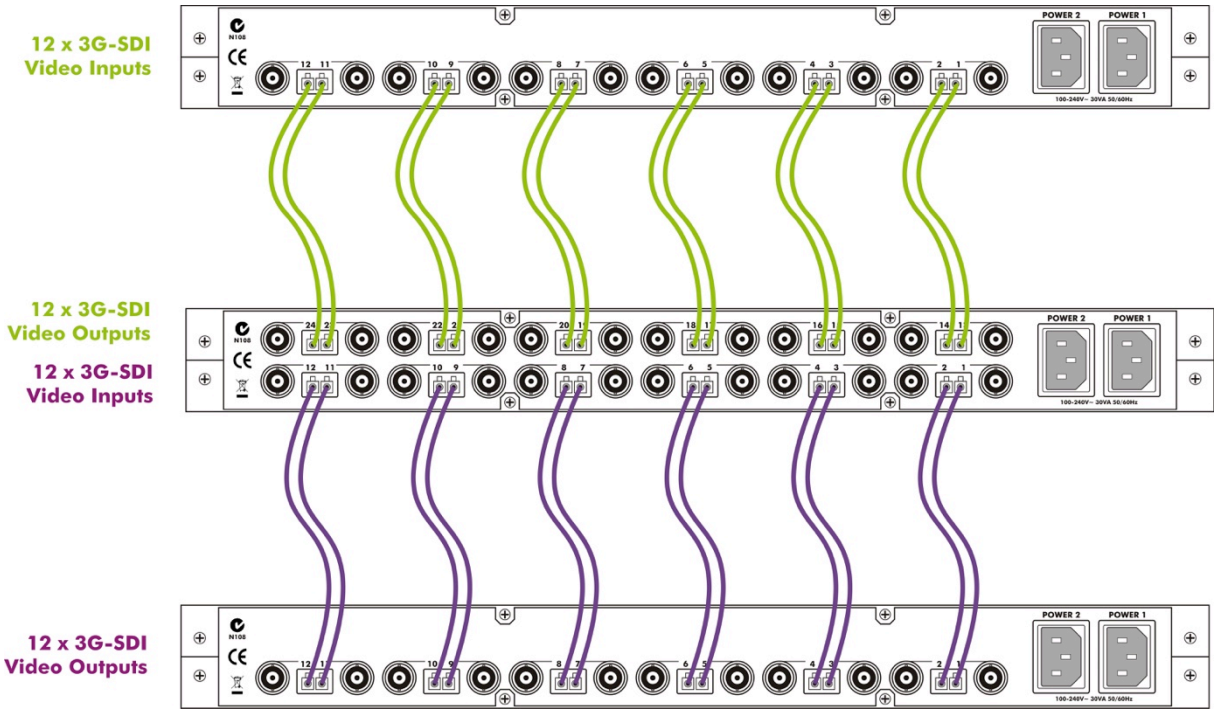


Fig. 1: Connections between a Repeat48-12/12 to a Repeat48-12/0 and a Repeat48-0/12.

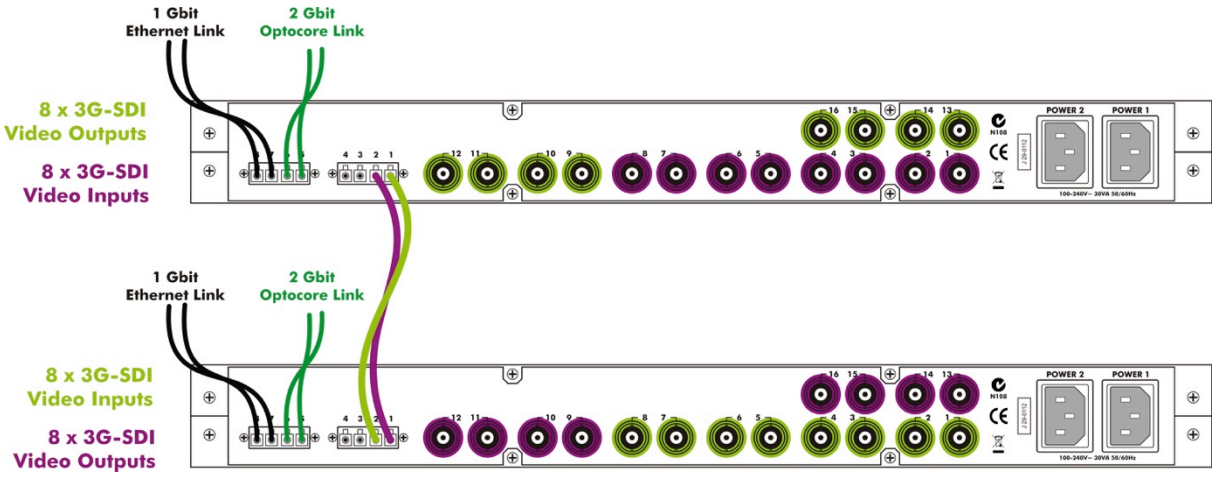


Fig. 2: Connections between a Repeat48WDM-8/8 to a Repeat48WDM-8/8.

Technical Specifications

Video	
Standards	SD, ED, HD, Dual Link, 3G
Complies with SMPTE	259M, 292M, 344M, 372M, 424M
Interface	SDI – Serial Digital Interface

Optical Connection	Complies with 21 CFR 1040.10 and 1040.11

Power supply	
Type	AC Supply: Switch-mode, universal input
AC Voltage	100 … 240 V
Frequency	50 … 60 Hz
Type (DC Option)	DC-DC Converter
DC Voltage	8 … 18 V
Power consumption	Depending on the configuration of the device, 32VA - Max
Security classification	Class 1: basic insulation, connected to the protective grounding conductor
Security regulations	Harmonised European standard EN60065
Mains connector	acc. to IEC-950
Cooling	Passive, via surface and ventilation openings on both sides of the device

Dimensions and Weight

Dimensions

Front panel:	width	483 mm / 19 inch
	height	44 mm / 1.73 inch
	depth	200 mm / 7.87 inch
Rear panel:	width	438 mm / 17.25 inch

Weight

Configuration dependent.

Please note:
Modifications that serve the purpose of technical improvement may be carried out without prior notification.

Warranty and Liability

Summary of Warranty

Broaman Repeat48/Repeat48WDM device is warranted against defects in material and workmanship for 60 months (5 years) from the date of purchase. This warranty does not include mechanical damages caused by misuse. This warranty covers the original registered purchaser only and is not transferable. This warranty does not apply to devices which have been purchased in used condition or demonstrator equipment.

BROAMAN will, at its discretion, repair or replace a defective product, providing that the defect has occurred under normal operating conditions.

This warranty does not cover damage from acts of God, accident, abuse, neglect, contamination, unauthorised modification, misuse, or operation outside of the environmental specifications for the product, improper site preparation or maintenance, or abnormal conditions of handling. This would include over-voltage failures, and conditions outside of the products specified ratings, problems with customer-supplied software or interfacing, or normal wear and tear of mechanical components. BROAMAN will acknowledge the evaluation of warranty after inspection.

Not covered by this warranty are defects arising from electromagnetic or electrical interferences, deficiency, excess, or surge of electrical supply, air conditioning, or humidity. This also includes repairs made necessary by dirt, abrasion, moisture, rust, corrosion, or similar conditions.

Devices on which the Serial Number has been removed or defaced are not eligible for warranty service.

BROAMAN devices contain no user-serviceable components: refer to qualified service personnel for repair or upgrade. The warranty will be void if you tamper with internal components. Please address any questions or inquiries to BROAMAN or your distributor/dealer.

For a full warranty conditions refer to the Warranty Card attached to every Broaman device with a first shipment.

How to Obtain Warranty Service

When discovering a problem with an BROAMAN device, you should contact either Broaman directly or a dealer/distributor to determine and confirm a hardware fault. If it is a software issue the hardware must not be returned to BROAMAN, BROAMAN will issue a support ticket in this case.

If hardware service is required within the warranty period, take the equipment, along with warranty card, to the nearest authorised BROAMAN dealer/distributor. The dealer/distributor will make sure that the device is serviced according to the terms of warranty by BROAMAN or an authorised service centre.

If the equipment needs to be returned directly to BROAMAN, first contact support@broaman.com.

BROAMAN requires the serial number of the equipment intended for return, as well as a short description of the problem. If possible, you should also provide us a phone number where you can be reached during regular working hours. To return a defective product, please contact your distributor / dealer. Our web site: **http://www.broaman.com/** provides a complete list of Broaman distributors / dealers.

Make sure the equipment being returned is packed carefully to protect it from damage during shipment. BROAMAN requires that shipments are pre-paid and insured – unless specifically authorized in advance.

We strongly advise not to use simple flight-cases without rack-in-rack mounting.

Declaration of Liability

Broaman accepts no liability for damage caused to other devices through operation of the Repeat48/Repeat48WDM device.

Broaman is not liable for any damage caused by shipping accidents, misuse, abuse, operation with incorrect AC voltage, operation with faulty peripheral equipment, or improper or careless installation of the device.

Neither BROAMAN nor anyone involved in the production of the equipment shall be liable for any indirect, special, disciplinary, consequential, or incidental damages arising out of the use or inability to use this equipment even if BROAMAN has been advised of the possibility of such damages. In no event shall the liability of BROAMAN exceed the purchase price of any defective equipment.*Broaman accepts no claims for compensation whatsoever (e.g. cancellation of events).*

Package Contents

Repeat48/Repeat48WDM is a part of the ordered system. Each Repeat48 (or Repeat48WDM) package consists of:

- 1 Repeat48 (or Repeat48WDM) unit
- 2 power cables

Any additionally purchased equipment such as optical fibre cables in required lengths, D-Sub cables and adapters, RS232 cables, and international electric cables which have been supplied on your request and your purchase order, cannot be listed above.

Please note that due to the Ecology reason standard shipment **does not** contain printed copy of User Manual. All latest BROAMAN user manuals can be downloaded from the website:

http://www.broadcastmanufactur.com/index.php/support-downloads

Printed version of User Manual is available on a special demand. Please contact **support@broaman.com** if printed version is required.

A configuration sheet is provided with a Repeat48/Repeat48WDM.

Contact Information

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