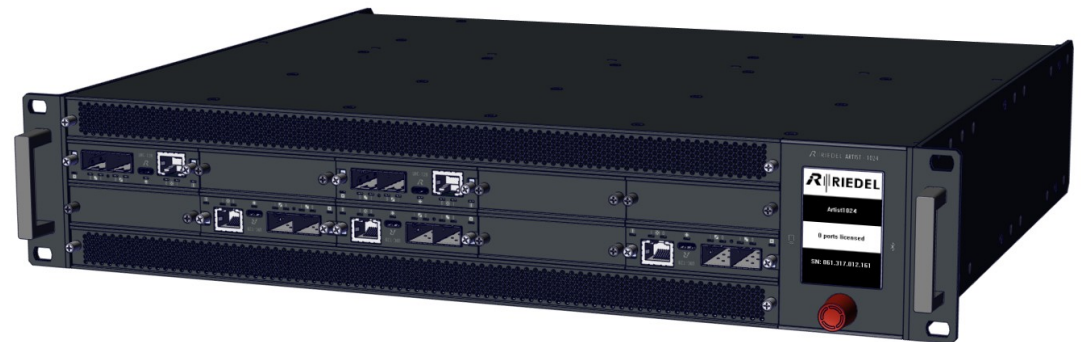


Artist-1024

8.4

User Manual



This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by Riedel may void the FCC authorization to operate this equipment.

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 communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



The device conforms to the following EU guidelines as attested by the CE mark.

- EMC 2014/30/EU
- LVD 2014/35/EU
- RoHS 2011/65/EU

Standards

- EN 50581:2012
- EN 55032: 2015
- EN 55035-2:2017
- EN 61000-3-2:2014, EN 61000-3-3:2013
- EN 61000-4-2:2009, EN 61000-4-3:2006+A1:2008+A2:2010, EN 61000-4-4:2012, EN 61000-4-5:2014, EN 61000-4-6:2014, EN 61000-4-8:2010, EN 61000-4-11:2004
- IEC/EN 60950-1:2005+A1:2009+A2:2013
- IEC/EN 62368-1:2014, UL/CSA 62368-1:2014



YFJART1024

Industry 8706A-ART1024
Canada



Management
System
ISO 9001:2015



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Artist-1024 8.4 User Manual

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Content

1	Preface	4
1.1	Information	4
1.2	Safety Instructions	5
1.3	Change History	7
1.4	Firmware Version	7
1.5	About Artist-1024	8
2	Artist-1024 - Node	9
2.1	Frame (MFR-1024)	9
2.1.1	Info Display	10
2.1.2	Display Content	10
2.1.3	Operation	11
2.2	LED Wedge (WDG-1024)	12
2.3	Front Filter (FRF-1024)	12
2.4	Power Supply (PSU-1024)	13
2.5	Fan Unit (FAN-1024)	13
2.6	Technical Drawing	14
2.7	Installation Options	14
2.8	Technical Specification (Frame)	15
3	Artist-1024 - Cards	16
3.1	UIC-128	16
3.1.1	Front Elements	16
3.1.2	Status LEDs	17
3.1.3	Port Types	17
3.1.4	Technical Specifications	17
4	Features in Detail	18
4.1	NIC Redundancy	18
4.2	Replacing Front-Filter	18
4.3	Replacing Rear-Filter	19
4.4	Reversing the Airflow	19
4.5	Connections	21
4.6	Recommended SFPs	21
5	Licensing	22
5.1	License Model	22
5.2	Flexible License	23
5.3	First Steps	23
5.4	Flexera User Portal	23
5.4.1	Login	23
5.4.2	Forgotten Password	24
5.4.3	User Profile & Security	24
5.5	Riedel License Manager	25
5.5.1	Login	25
5.5.2	Downloading License	25
5.5.3	Extending License	26
5.5.4	Moving License	27

5.6	Installing License	28
-----	--------------------------	----

6	Appendix	29
----------	-----------------	-----------

6.1	Glossary	29
-----	----------------	----

6.2	Maintenance Recommendations	30
-----	-----------------------------------	----

6.3	Service	30
-----	---------------	----

Index.....	31
------------	----

1 Preface

Thank you for choosing a Riedel product.

This PDF document provides detailed information about the Artist-1024 system, pin outs, mechanical and electrical data.

For further information, please refer to the [Riedel Website](#) or contact your local distributor or the Riedel headquarters in Wuppertal.

NOTICE

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1.1 Information

Symbols

The following tables are used to indicate hazards and provide cautionary information in relation to the handling and use of the equipment.

Danger	
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
The highlighted line indicates the activity to prevent the danger.	

Warning	
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
The highlighted line indicates the activity to prevent the danger.	

Caution	
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
The highlighted line indicates the activity to prevent the danger.	

	This text is for generally information. It indicates the activity for ease of work or for better understanding.
---	---

1.2 Safety Instructions

Service

- All service has to be undertaken **only** by qualified Riedel service personnel.
- Do not plug in, turn on or attempt to operate an obviously damaged device.
- Never attempt to modify the equipment components for any reason.

Caution	
	All adjustments have been done at the factory before the shipment of the devices. No maintenance is required and no user serviceable parts are inside the module.

Ventilation

- Keep front and rear of the frame always closed.
Bays without cards must be covered with blind plates.
- Do not place the device next to a hot source like a radiator.
- Ventilation openings in the front and rear must never be blocked.

Environment

- Never place containers with any liquids on top of the devices.
- Never place the devices in areas of high dust particles or humidity.
- Be aware of the operating temperature of the systems (0 ... +45 °C / 32 ... 113 °F).
- If the equipment has been exposed to a cold environment and transferred to a warm environment, condensation may form inside the housing. Wait at least 6 hours before applying any power to the equipment.

Voltage

- The power cable should only be connected to a correctly grounded source.
- Do not use any adapters.
- Never bypass a ground contact.
- The mains plugs is used as a disconnect device. It is imperative that access to the mains plugs and the associated mains socket/outlet is never obstructed.

Danger	
	To reduce the risk of electric shock do not remove cover or expose the products to rain or moisture.

Caution	
	Frames do have redundant Power supplies. To shut down the unit completely, remove both power cords.

Warning	
	• Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan. • Apparaten må tilkoples jordet stikkontakt. • Apparaten skall anslutas till jordat uttag. • Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.

ESD Safety

Device components shipped in antistatic bags are sensitive to damage from static electricity. You can easily generate potentially harmful static voltages when handling plastic or foam packaging or moving components over plastic or carpets.

Please observe the following guidelines to avoid damage from electrostatic discharge (ESD), which may result in failures or destruction of components:

- When handling open cards, use an ESD wristband and ensure that it is in direct contact with your skin.
- If there is no grounding strap available, touch a grounded metal surface before removing or inserting the card from a device.
- Avoid contact between the cards and your clothing. ESD voltages emitted from clothing can damage components.
- When removing or installing a card, always place it with the heat sink facing upwards on an antistatic surface or in an ESD bag.
- When returning cards, put them in an ESD bag before packing it.

Laser Safety

Artist-1024 devices / cards can be equipped with optical fiber modules (FOM) for the data transmission over a fiber.

Observe the following guidelines and warnings:

- Because invisible radiation might be emitted from the aperture of SFPs when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures.
- Do not look at fibers that connect to unknown sources.
- Do not examine unterminated optical ports with optical instruments.
- Avoid direct exposure to the beam.



The laser transceivers are considered as a class 1 laser product per EN 60825-1, FDA 21 CFR1040.10 and 1040.11 requirements.

Caution	
	The accessible laser radiation is harmless under reasonably foreseeable conditions. Note: The reasonably foreseeable conditions are met during normal operation.
	The limit value of the accessible radiation of DIN EN 60825-1:2001-11 in the wavelength range from 400 nm to 1,400 nm for the classification of a laser is the same between 100 s and 30,000 s. Therefore, nuisances cannot be ruled out in the case of long-term effects.

Disposal

Disposal of old Electrical & Electric Equipment (Applicable throughout the European Union and other European countries with separate collection programs).

	This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product please contact your local city office.
---	--

1.3 Change History

No changes have been made to the content since the last version 8.3, so the content of this document remains valid for Artist 8.4.

1.4 Firmware Version

This manual refers to firmware version **8.4** of the Artist-1024 system and describes the current version of the hardware.
Older hardware may vary in the pinouts, electrical data and internal circuit design.



The current Artist hardware only supports the last two introduced Firmware/Director versions.

Checking the Firmware Version

The firmware version can be checked in the Director configuration software:

- Open the online view in the Director by clicking the  button.

In the upper part of the window the column '**FW Version**' shows the firmware and bugfix versions of all Artist nodes detected in the network.

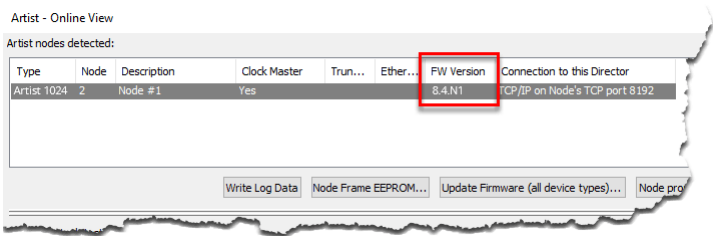


figure 1: firmware version (Director)

1.5 About Artist-1024

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

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

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

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

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

The frame design is rounded off by an e-paper display that provides configuration and licensing information, even when powered off. Artist-1024 also offers flexible mounting options: The frame can be mounted with an off set of 0.25, 50 or 75mm and can be rotated in the rack. If required, the ventilation can be reversed to provide efficient cooling in any situation.

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

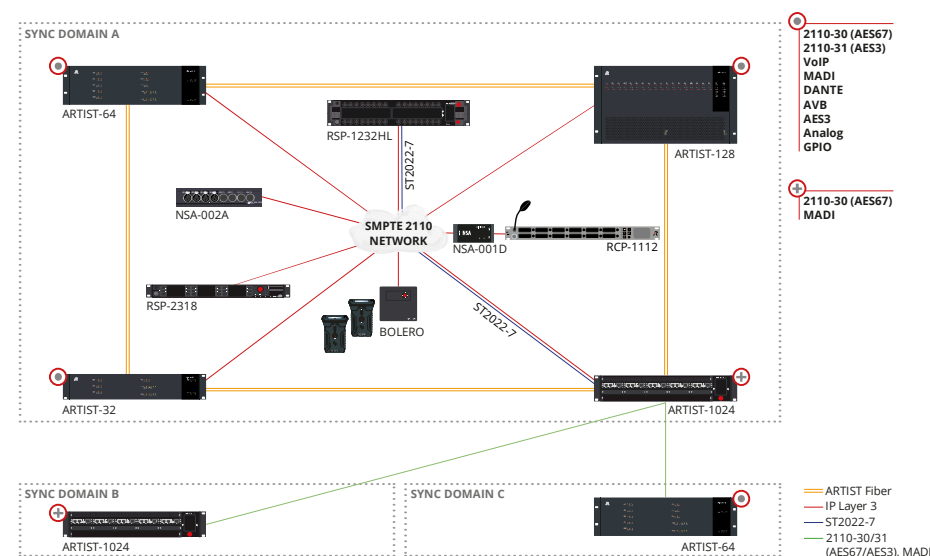


figure 2: system overview (example)

2 Artist-1024 - Node

The Artist-1024 node incorporates the display and is shipped with two redundant power supplies and one fan module with two high quality fans. Furthermore two front and one rear filter are part of the delivery scope. All components are hot pluggable.

- One Artist-1024 frame has slots for:
- Front Bays
 - 8 **S**ubscriber Interface **C**ards (SIC)
 - 2 **N**etwork Interface **C**ards (NIC; one **p**rimar**y** PNIC and one **s**ecundar**y** SNIC)
 - Rear Bays
 - 4 bays for future use

- The possible capacities are:
- 8 ... 128 Ports per SIC
 - 16 ... 1024 Ports per Frame

The Artist-1024 node is compatible to Artist-32/64/128 frames and can be integrated in present setups. The management of the system is done in the Director configuration software. The frame must be connected via the configuration ports (RJ45) of one of the ten UIC-128 cards. The following chapters describe the basic components of the Artist-1024 system.

front view				
	Position	SIC	NIC	Card type
1	Bay 1	✓	-	UIC-128
2	Bay 2	✓	-	
3	Bay 3	-	✓ (primary > PNIC)	
4	Bay 4	✓	-	
5	Bay 5	✓	-	
6	Bay 6	✓	-	
7	Bay 7	✓	-	
8	Bay 8	-	✓ (secondary > SNIC)	
9	Bay 9	✓	-	
10	Bay 10	✓	-	
11	Filter (top/bottom)			FRF-1024
12	Display with rotary encoder			Display unit

2.1 Frame (MFR-1024)

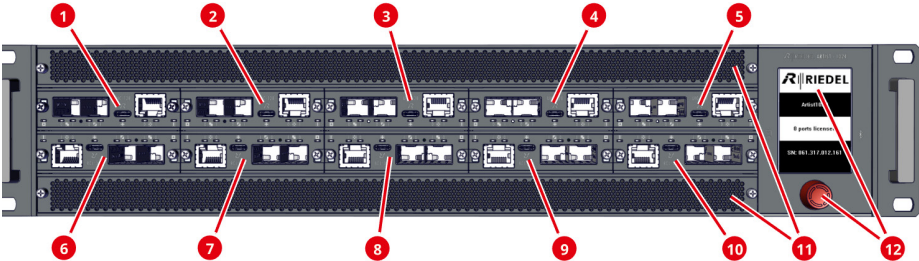


figure 3: Artist-1024 (front view)

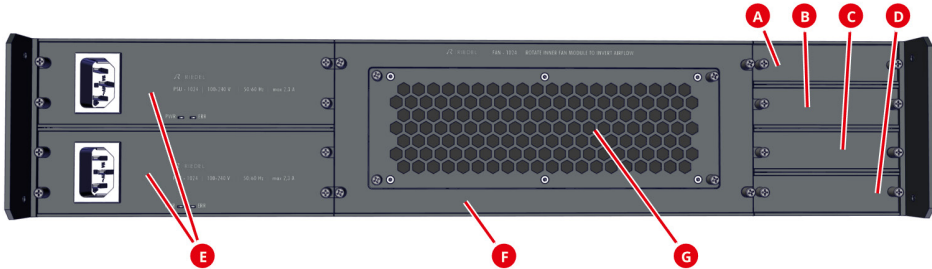


figure 4: Artist-1024 (rear view)

rear view

	Position	Card type
A	Bay A	future use
B	Bay B	
C	Bay C	
D	Bay D	
E	Power Supplies (top/bottom)	PSU-1024
F	Fan module	FAN-1024
G	Filter	RRF-1024



The display is fixed to the frame and can be replaced by qualified Riedel service personnel only.

Caution

 Please keep the Artist-1024 frame always closed to prevent the hardware from overheating. Cover unused slots on the front and rear side with blind plates.

2.1.1 Info Display

The display shows system and license information of the Artist-1024 node. As the display uses e-paper technology, this information is visible in the on and off state.



figure 5: info display

2.1.2 Display Content

Following status information is displayed when the power is off:

- Name of the Artist-1024 node
- Number of licensed ports
- Serial number of the Artist-1024 node



figure 6: info display (node not powered)

If the Artist-1024 is connected to mains voltage, the default view is displayed:

- Basic configuration information is shown to equip the frame with the correct UICs and SFPs.
- The currently selected slot position is indicated by a bar above/below the corresponding position.

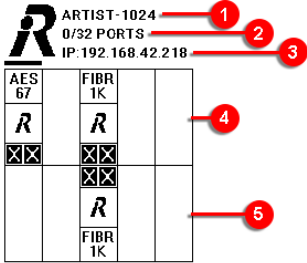


figure 7: info display (main view)

1	Name of the Artist-1024 node						
2	Number of configured/licensed ports						
3	IP address of the configuration port of the primary NIC (PNIC, bay 3)						
4	Example of the status info of the upper slots	AES67 R XX PNIC R XX	Bay: 1	Bay: 2	Bay: 3	Bay: 4	Bay: 5
			AES67-SIC	SIC (not equipped)	PNIC (primary)	SIC (not equipped)	SIC (not equipped)
5	Example of the status info of the lower slots	XX R PNIC	Bay: 6	Bay: 7	Bay: 8	Bay: 9	Bay: 10
			SIC (not equipped)	SIC (not equipped)	SNIC (secondary)	SIC (not equipped)	SIC (not equipped)

SIC (Status Info)

- | | |
|---|--|
| 1 | Transport Type |
| 2 | Number of ports configured/assigned in Director |
| 3 | Slot position of the respective card in the Artist-1024 node |
| 4 | Artist ID of the node |
| 5 | IP-address/netmask of the configuration port |

AES	67	0/32 ports
Bay :	1	
ArtID :	0	
IPv4 :	192.168.42.200/24	

NIC (Status Info)

- | | |
|---|--|
| 1 | Transport Type |
| 2 | Network interface active / standby |
| 3 | Slot position of the respective card in the Artist-1024 node |
| 4 | Artist ID of the node |
| 5 | Long Name of the Artist-1024 node |
| 6 | IP address/netmask of the NIC |
| 7 | Gateway of the SIC (if active) |
| 8 | Serial number of the frame |

FIBR	1K	active
Bay :	3	
ArtID :	0	
Node :	ARTIST-1024	
IPv4 :	192.168.42.218/24	
GW :	0.0.0.0	
Serial :	9999102030400	

2.1.3 Operation

In the Artist-1024 can be navigated through the display as follows:



Turning the rotary encoder

Select the next / previous slot

A horizontal line is displayed above/below the currently selected slot position.



Pushing the rotary encoder

- **Enter selected slot / one layer down**
Status information of the respective card is displayed.
- **leave current slot / one layer back**
The display jumps back to the main view.



The currently selected slot position is indicated by a bar above/below the corresponding position.

2.2 LED Wedge (WDG-1024)

The WDG-1024 card guides the air flow through the rack and thus ensures sufficient cooling of the modules. The housing is made of transparent plastic, which is illuminated by RGB LEDs and indicates the state of the corresponding card. Furthermore there is a sensor on the board that detects the contamination of the air filter.

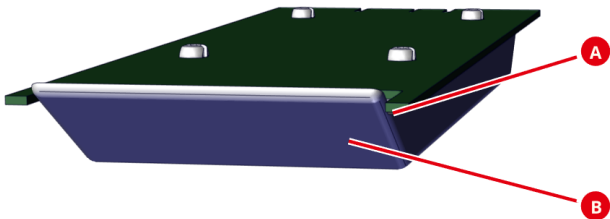


figure 8: WDG-1024

A	Sensor
B	Air guide

2.3 Front Filter (FRF-1024)

The top and bottom front filters protect the inside of the rack from dust and dirt.



figure 9: FRF-1024 (front view)

Caution	
	By default the MFR-1024 is equipped with air filters on the front side only. Please observe the following instructions before operation: • There must be an air filter in the air inlet. • There must be no air filter in the air outlet. • Check the direction of the air flow after replacing a fan unit. • Fit or remove the air filters according to the direction of flow. • Only use original Riedel accessories.

- The replacement of the front filter is described in the chapter '[Features in Detail > Replacing Front-Filter](#)'.
- Reversing the airflow is described in the chapter '[Features in Detail > Reversing the Airflow](#)'.

2.4 Power Supply (PSU-1024)

There are two power supplies in an Artist-1024 node: On the one hand, the energy is provided equally by both power supply units. On the other hand, full redundancy can be guaranteed if both power supplies are connected to different fuse circuits.

Both power supplies must be used to achieve the maximum device service life.

Danger
The power supplies must not be opened at any time.

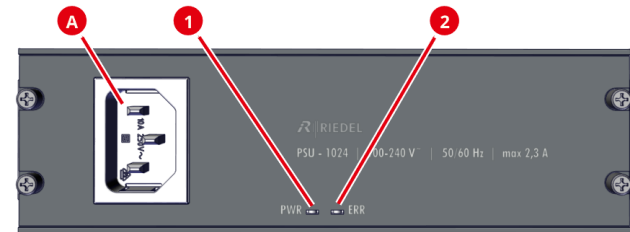


figure 10: PSU-1024 (front view)

1	Power status LED	green	Both power supplies are in operation and power sharing is ok.
		amber	This power supply is in operation but power sharing is faulty.
		red	Power supply is short-circuited.
		red blinking	This power supply is not connected to mains voltage and is supplied by the other power supply.
		red	This power supply is not connected to mains voltage and is supplied by the other power supply.
2	Error status LED	off	Power supply defective or no power supply is connected to mains voltage.
		off	Power supply defective or no power supply is connected to mains voltage.
		off	Power supply defective or no power supply is connected to mains voltage.
		off	Power supply defective or no power supply is connected to mains voltage.
		off	Power supply defective or no power supply is connected to mains voltage.
2	Error status LED	off	This power supply is ok.
		amber	High current / high temperature detected.
		red	Critical current / critical temperature detected.
		red blinking	Error of power sharing detected.
		red blinking	Error of power sharing detected.

Synchronous flashing of both PSU LEDs indicates trouble-free operation between the PSUs.

2.5 Fan Unit (FAN-1024)

The Artist 1024 node has a fan unit with 2 high quality and quiet fans.

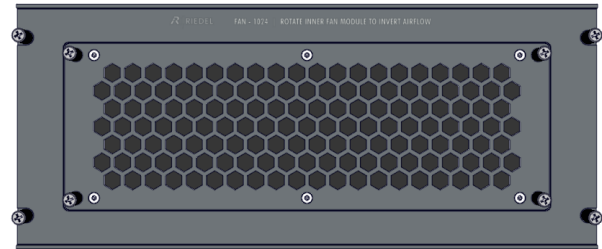


figure 11: FAN-1024 (front view)

The standard airflow for cooling the Artist-1024 flows horizontally from front to rear.

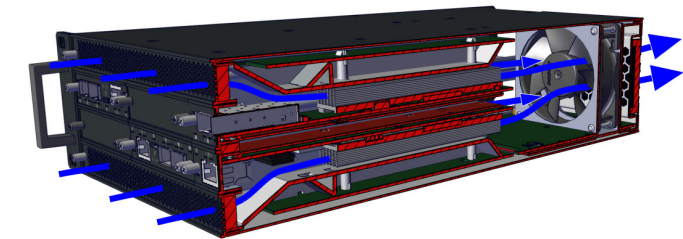


figure 12: Artist-1024 air flow

Caution
By default the MFR-1024 is equipped with air filters on the front side only. Please observe the following instructions before operation:

- There must be an air filter in the air inlet.
- There must be no air filter in the air outlet.
- Check the direction of the air flow after replacing a fan unit.
- Fit or remove the air filters according to the direction of flow.
- Only use original Riedel accessories.

- The replacement of the rear filter is described in the chapter '[Features in Detail > Replacing Rear-Filter](#)'.
- Reversing the airflow is described in the chapter '[Features in Detail > Reversing the Airflow](#)'.

2.6 Technical Drawing

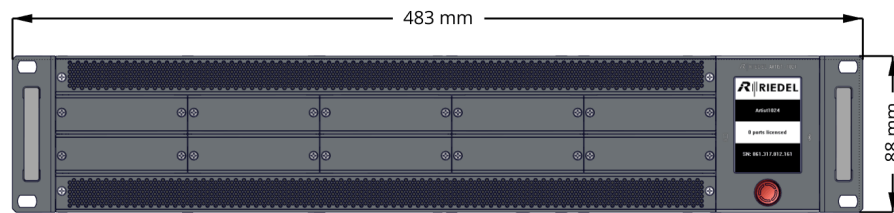


figure 13: Artist-1024 – technical drawing (front view)

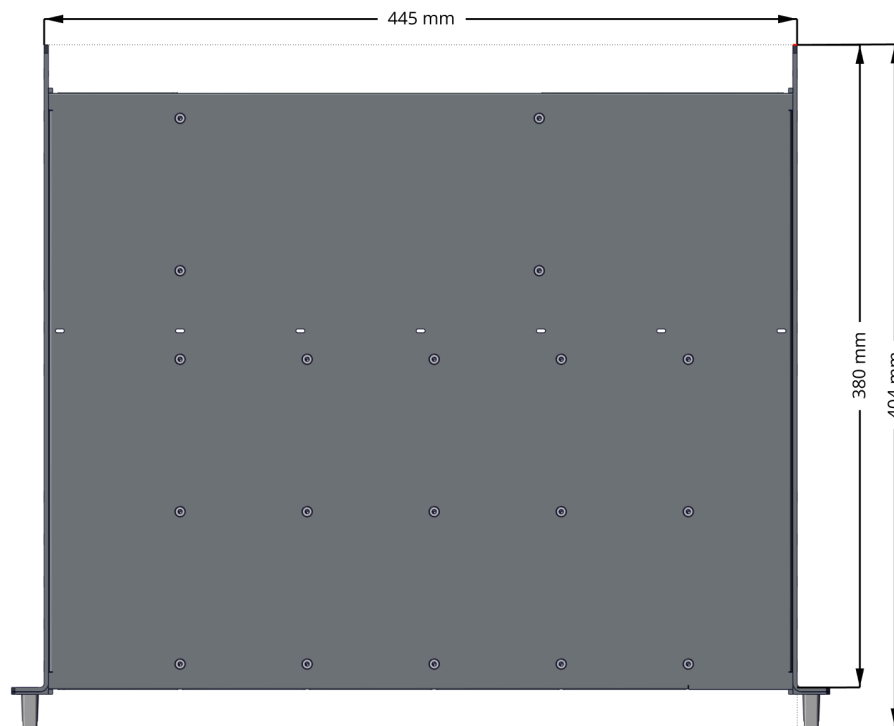


figure 14: Artist-1024 – technical drawing (top view)

2.7 Installation Options

The Artist 1024 frame can be installed mechanically in various ways:

- Front cabling
- Rack cabling
- Variable installation depth

By default the 19" mounting brackets are mounted so that the front of the frame faces towards the operator. With this mounting option the cabling can be easily and quickly carried out on the front of the frame and can also be changed again.

If the mounting brackets are mounted rotated by 180°, the front of the unit faces into the rack and allows cabling from the rear of the rack. This is advantageous for permanent installations, as the cabling is protected inside the rack and cannot be accidentally changed.

Regardless of the orientation of the frame, the mounting brackets can be mounted in four different positions on the frame to achieve different installation depths from 0 to 75 mm.



figure 15: Artist-1024 installation options

2.8 Technical Specification (Frame)

Number of ports per frame	16 ... 1024	
Number of ports per card	8 ... 128	
Licensing	Virtual Artist Matrix (VAM) license which includes a defined number of ports (16 to 1024) that can be freely distributed across the node's subscriber cards.	
Display type	High-Contrast e-paper display	
Power supply	Mains voltage	100 - 240 VAC
	Frequency	50 / 60 Hz
	Cos phi	0,94
Power consumption	max. 225 W / <770 BTU/h, max. 2.3 A	
Dimensions (installing dimensions)	Width	19" / 483 mm (17.5" / 445 mm)
	Height	2RU / 3.5" / 88 mm
	Depth	404 mm / 15.9" (377 mm / 14.8")
Weight (inc. 2× PSU-1024 and 1× FAN-1024)	6,3 kg	
Operating Environment	Operating Temperature	0 ... +45 °C / 32 ... 113 °F
	Storage Temperature	-30 ... +80 °C / -22 ... 176 °F
	Humidity	20 ... 90 % RH (non-condensing)
	Max Altitude	3000 m AMSL / 10,000 ft AMSL
Product codes	Artist-1024	1010010
	FRF-1024	6530050
	PSU-1024	1010011
	FAN-1024	1010012
	RRF-1024	6530100

3 Artist-1024 - Cards

3.1 UIC-128

The function of the UIC-128 card is determined by the slot position and card configuration in the Artist-1024 node.

Slot	Function	SFP	Capacity
SIC	Audio interface to connect: - SMPTE ST 2110-30 (AES67 channels) - MADI channels	- electrical - optical	128 channels each UIC-128 - AES67: 128 channels each SFP - MADI: 64 channels each SFP
NIC	Network interface to connect: - Artist-1024 - Artist-32/64/128 See also ⇒ NIC Redundancy	optical (Down-/Up-stream to the next/previous frame)	1024 channels in an Artist-1024 frame

UIC-128 in ...

- AES67 mode supports SFPs with SGMII and 1000BaseX interface.
- MADI mode supports SFPs with 1000BaseX interface.
- Artist-Fiber mode supports SFPs with 1000BaseX interface.

In version 8.0, the configuration and IP address is stored on the respective card.
If a UIC-128 in an Artist-1024 node has to be replaced, the configuration and IP address must be manually stored on the card to be replaced.

In version 8.3, the configuration is no longer stored on the card, but on the NIC of the frame.
Only the configuration IP address of the UIC is still stored on the card. When replacing the UIC as SIC, only the IP address must therefore be saved on the card to be replaced.

3.1.1 Front Elements

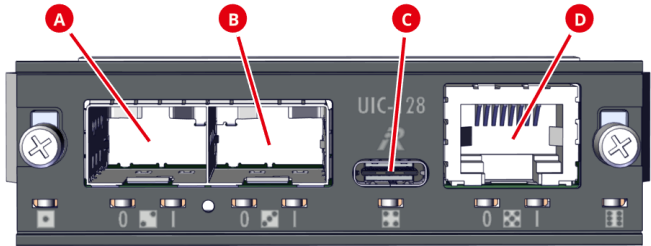


figure 16: UIC-128 (front view)

UIC-128 as SIC

A		Slot Media 1	Connection of two AES67 or MADI SFPs.
B		Slot Media 2	Two different formats cannot be used simultaneously.
C		USB Type-C (reserved for future use)	
D		Configuration port (RJ45)	- Management port to configure the Artist 1024 frame/network. - Configuration is done via the Director configuration software.

UIC-128 as NIC

A		Downstream (link output) - The downstream port is connected to the upstream port of the next Artist frame in the Artist ring. - If a second UIC-128 is used in the Artist 1024 frame, this port is connected to the upstream port of the second UIC-128.
B		Upstream (link input) - The upstream port is connected to the downstream port of the previous Artist frame in the Artist ring. - If a second UIC-128 is used in the Artist 1024 frame, this port is connected to the downstream port of the second UIC-128.
C		USB Type-C License management
D		Configuration port (RJ45) - Management port to configure the Artist 1024 frame/network. - Configuration is done via the Director configuration software.

3.1.2 Status LEDs

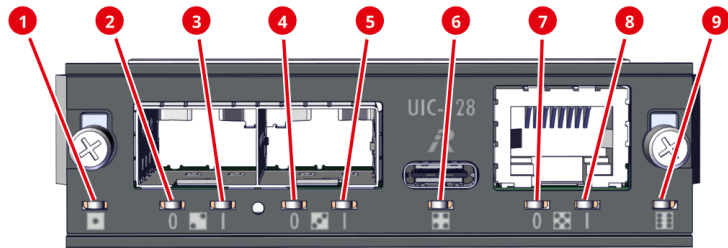


figure 17: UIC-128 (status LEDs)

1		State	green	OK
			amber	Warning
			red	Error Level 1
			red blinking	Error Level 2
2		Downstream- / Upstream- Quality	green	Link quality OK
			amber	Link quality critical
			red	Link quality poor
			off	No connection
3		Downstream- / Upstream- Link	blue	Link OK
			amber	Link OK, card is not Master
			red	SFP malfunction
			off	No connection
6		USB	reserved for future use	
7		Ethernet Activity	amber blinking	Activity
			off	inactive
8		Ethernet Link	green	1 Gbit/s connection OK
			amber	10/100 Mbit/s connection OK
			off	no connection
9		Operation	blue	Voltage OK
			green fading in/out	Normal operation
			off	No Voltage

3.1.3 Port Types

The table shows in which card configuration which port types are available in Director.

Port selection	Port/Panel type	Card configuration	
		AES67-SIC	MADI-SIC
1200 series	RSP-1232HL	✓	–
	RSP-1216HL	✓	–
	ESP-1216HL	–	–
2300 series*	RSP-2318 (BASIC, PLUS, PRO)	✓	–
	DSP-2312 (BASIC, PLUS)	✓	–
4-Wire	4-Wire (In and Out)	–	✓
	4-Wire split (separated In and Out)	–	✓
Miscellaneous*	AES67 Trunkline	✓	–
	Bolero Wireless Beltpack	✓	–
AES67 4-Wire	AES67 Input	✓	–
	AES67 Output	✓	–
	AES67 split (separated In and Out)	✓	–
	4-Wire (In and Out)	✓	–

* Not for redundant streams 2022-7.

3.1.4 Technical Specifications

Type	Product Code	Weight	Power Consumption (typ./max.)		Voltage
UIC-128	1020100	280 g	13 W / 44 BTU/h	typ.	12 VDC
			20 W / 68 BTU/h	max.	

The UIC-128 uses a temperature compensated oscillator (TCXO) in AES67 SIC mode with an accuracy of ±0.5 ppm. This is compatible with the media profile in master and slave mode.

4 Features in Detail

4.1 NIC Redundancy

The NICs in Bay 3 and Bay 8 are now fully synchronized and redundant.

For example, if another NIC is inserted in Bay 8 (secondary NIC > SNIC), the NIC in Bay 3 (primary NIC > PNIC) remains active. The new SNIC is set into standby mode and the current Artist configuration is copied into the new inserted SNIC. Also, the Artist ID and IP address are taken from the PNIC, whereby the IP address of the SNIC is increased by '+1' to get an odd IP address. If the firmware on this SNIC is outdated (firmware without final NIC redundancy support), it will be updated automatically.

In case of a failure of the active NIC (in this case the PNIC in Bay 3), the standby NIC (in this case the SNIC in Bay 8) takes over the function and becomes the active NIC. The IP address is taken from the previously active PNIC (even IP address) and the card becomes the ring clock master. The new NIC remains active until it fails due to an error. The system will not switch the original PNIC back to active when it becomes available again.

Executing the following steps describes the switching logic of the NIC redundancy.

Step	Action	PNIC (Bay 3)	SNIC (Bay 8)
<i>Initial Configuration</i>		<i>active</i>	<i>standby</i>
1	unplug SNIC (failing SNIC)	<i>active</i>	–
2	plug SNIC (SNIC ok)	<i>active</i>	<i>standby</i>
3	reboot Artist-1024 frame	<i>active</i>	<i>standby</i>
4	unplug PNIC (failing PNIC)	–	<i>active</i>
5	plug PNIC (PNIC ok)	<i>standby</i>	<i>active</i>
6	reboot Artist-1024 frame	<i>standby</i>	<i>active</i>
7	unplug SNIC (failing SNIC)	<i>active</i>	–

4.2 Replacing Front-Filter

The two air filters are located in the fan grilles on the front.

Follow the steps below to replace the air filters:

- Loosen the four screws and remove the two fan grilles.
- Then pull the air filters out of the fan grilles.
- Insert the new/cleaned air filters into the fan grilles.
- Carefully insert the fan grilles into the frame and screw them back in place.

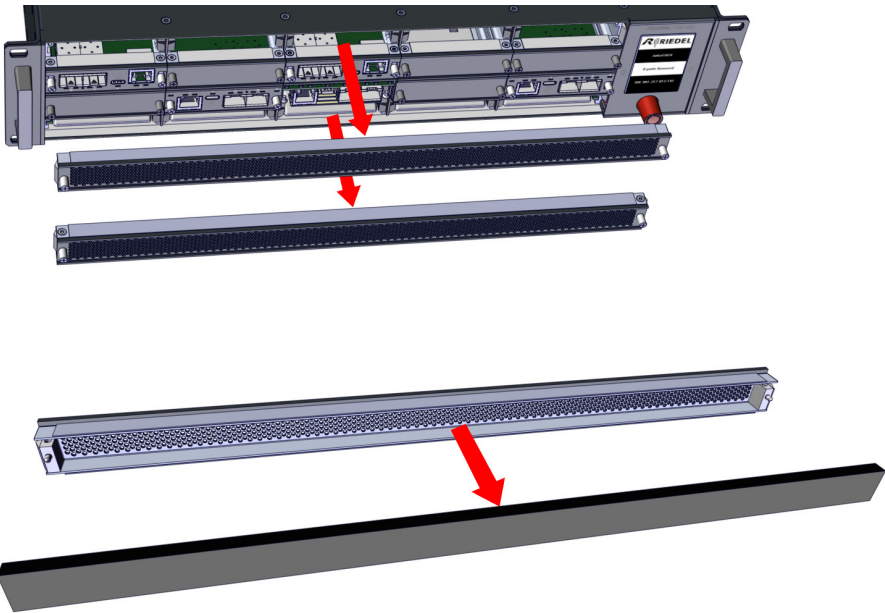


figure 18: replacing front filter

4.3 Replacing Rear-Filter

The rear filter is located at the rear of the fan unit.
Follow these steps to replace the rear filter:

- Loosen the four screws and remove the fan grille.
- Then pull the air filter sideways out of the fan grille.
- Insert the new/cleaned air filter into the fan grille.
- Carefully insert the fan grille into the fan unit and tighten it again.

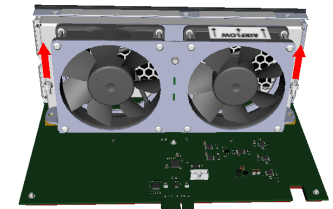
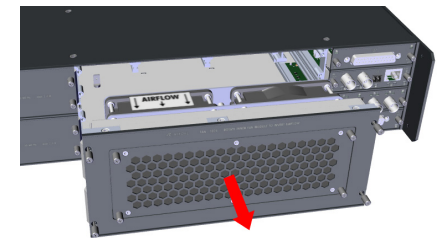
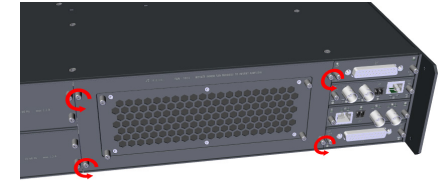


figure 19: replacing rear filter

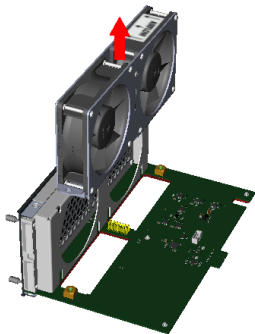
4.4 Reversing the Airflow

If necessary, the direction of the air flow can be reversed by turning the fan block.
Carry out the following steps:

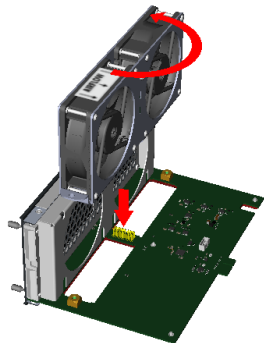
- Loosen the 4 knurled screws of the fan unit.
- Pull the fan unit out of the rack by loosening the knurled screws.
- Remove the two Torx screws from the fan block using a T20 screwdriver.



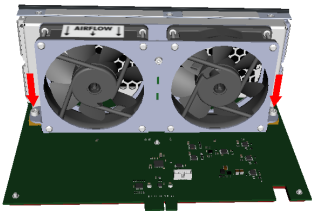
- Carefully pull the fan block upwards from the circuit board.



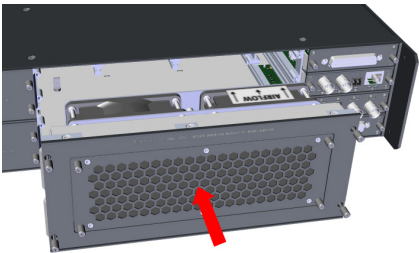
- Turn the fan block 180° and carefully insert it back onto the circuit board.



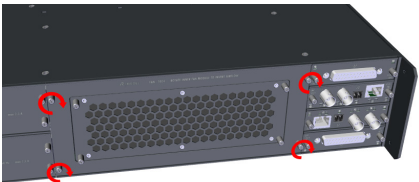
- Fasten the fan block with the two Torx screws.



- Carefully slide the fan unit into the subrack.



- Fasten the fan unit with the 4 knurled screws.



- Fit or remove the air filters according to the direction of flow.
The air filter must only be located at the air inlet:

Air Flow Direction		FRF-1024 (Front-Filter)	RRF-1024 (Rear-Filter)
standard	from front to back	✓	×
inverted	from back to front	×	✓

4.5 Connections

Connector Type	Connector	Cable Type	Cable length
CAT5	RJ 45	FTP (4x2 AWG 24)	Up to 100 m
Fiber	LC or SC	9/125 µm	Up to 10 km
		50/125 µm	Up to 2000 m (w. FOM MM HP)

All cable length can vary with the number of connectors, patchfields and attenuation on the line.

Caution

Crossed duplex fiber lines need to be used for all fiber connections.

The UIC-128 features two SFP slots, each of which can be equipped with a fiber optic module (FOM). Fiber Optical Modules (FOM) are available in three different versions, all equipped with LC connectors.

- FOM MM
- FOM MM HP
- FOM SM

FOM	Max. Distance	Mode	Fiber	Wavelength	Max. Output Power	Max. Attenuation
MM	550 m	multi mode	50/125 µm	850 nm	-4 dBm	8.5 dB
MM HP	2000 m	multi mode	50/125 µm	1310 nm	-1 dBm	9.5 dB
SM	up to 10 km	single mode	9/125 µm	1310 nm	-3 dBm	10.5 dB

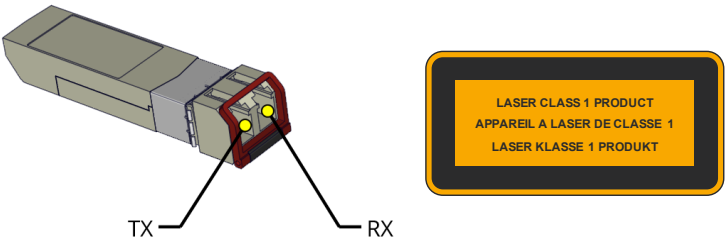


figure 20: SFP module

4.6 Recommended SFPs

SFP type	UIC type	Article	Data rate	Connector	Mode	Max. distance ^{*1}	Opt. budget
SFP-MADI-MM-1310-7,5-155Mbps	SIC (MADI)	1990002	155 Mbps	Duplex LC	multi mode	2 km ^{*2}	7,5 dB
SFP-MADI-SM-1310-19-155Mbps	SIC (MADI)	1990003	155 Mbps	Duplex LC	single mode	15 km ^{*3}	19 dB
SFP-MADI-MM-850-14-125Mbps	SIC (MADI)	1990047	125 Mbps	Duplex LC	multi mode	2 km ^{*2}	14 dB
MN-Z-SFP-MADIBNC-125Mbps	SIC (MADI)	1990049	125 Mbps	HD-BNC (75 Ohm)	AES10-2003	100 m (typical)	--
MN-Z-SFP-1000baseT-CAT5	SIC (AES67)	1990017: discontinued 9300645: replacement	10/100/1000 - Base-T	RJ45	--	100 m	--
ART-Z-SFP-CPU-MM-850-8,5-1,25Gbps	• NIC • SIC (AES67)	1090002	1,25 Gbps	Duplex LC	multi mode	500 m ^{*2}	8,5 dB
ART-Z-SFP-CPU-MM-1310-10-1,25Gbps	• NIC • SIC (AES67)	1090003	1,25 Gbps	Duplex LC	multi mode	2 km ^{*2}	10 dB
ART-Z-SFP-CPU-SM-1310-10,5-1,25Gbps	• NIC • SIC (AES67)	1090004	1,25 Gbps	Duplex LC	single mode	10 km ^{*3}	10,5 dB

^{*1} The maximum distance varies with the number of connectors, patch fields and attenuation on the line.

^{*2} 50/125 µm fiber

^{*3} 9/125 µm fiber

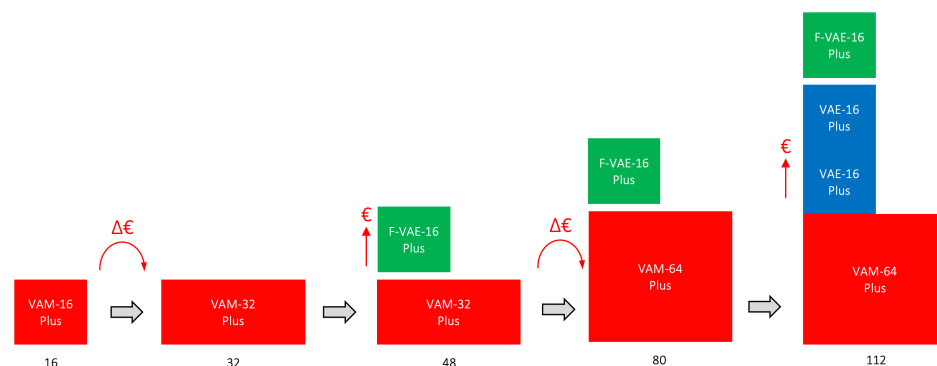
UIC-128 in ...

- AES67 mode supports SFPs with SGMII and 1000BaseX interface.
- MADI mode supports SFPs with 1000BaseX interface.
- Artist-Fiber mode supports SFPs with 1000BaseX interface.

5.2 Flexible License

The versatile licensing scheme give you unprecedented flexibility, scalability, and capability. With the ability to move ports between subscriber cards and flexibly assign connectivity types as needed, you can easily customize individual nodes, and the entire system, to fit the needs of your specific application.

- Virtual Artist Matrix (VAM) Licenses are always the fundament for each node.
- A VAM can be expanded using VAE-16 licenses and/or F-VAE-16 licenses.
- Multiple VAE-16 and F-VAE-16 licenses can be combined on a node.
- VAMs can be upgraded to a larger size.



5.3 First Steps

After purchasing Artist-1024 frames and licenses, the buyer receives an email generated by the license server (flex1230@flexnetoperations.com), in which the UserID and a temporary password are communicated.

- First log in to the Flexera user portal with this information and change password and security options. (<https://flex1230.flexnetoperations.com/flexnet/operationsportal/logon.do>)
- Only then log in to the Riedel License Manager web portal to download and manage licenses. <https://license.riedel.net/>

5.4 Flexera User Portal

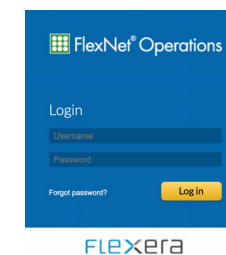
Riedel clients have access to the Flexera portal, that is entirely for use with user account/data management.

Users are able to ...

- log into the Flexera user portal if username (email) and password are known. (⇒ [Login](#))
- reset the password if lost or forgotten. (⇒ [Forgotten Password](#))
- change user profile details. (⇒ [User Profile & Security](#))

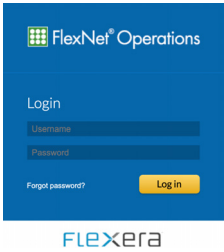
5.4.1 Login

- Navigate to following URL: <https://flex1230.flexnetoperations.com/flexnet/operationsportal/logon.do>
- Enter username (email address).
- Enter password.
- Click on "Log in".

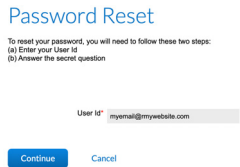


5.4.2 Forgotten Password

- Click on "Forgot Password?".

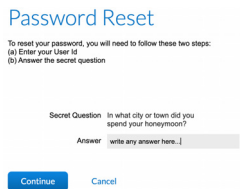


- Enter email (username).
- Click on "Continue".



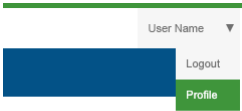
- Enter USELESS answer to question.
- Click on "Continue".

- A temporary password will be created and emailed.
- The password is valid for the next 4 hours.
- After log in with this temporary password, a new one must be entered.

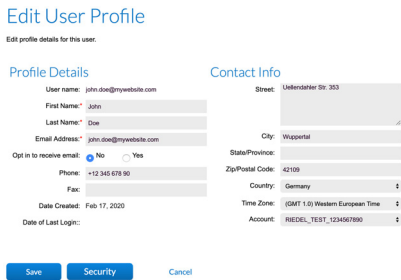


5.4.3 User Profile & Security

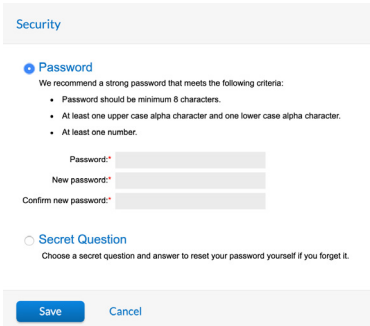
- After login click on "User Name / Profile".



- Change basic information and click on "Save".
- Click on "Security".



- Enter current and new password.
- Select "Secret Question" and enter a respective answer.
- Click on "Save".



5.5 Riedel License Manager

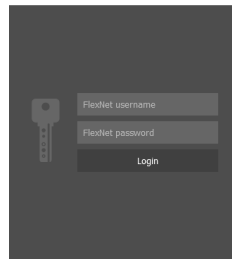
Riedel customers have access to the Riedel License Manager where licenses can be managed.

Users are able to ...

- log into the **Riedel License Manager** if username (email) and password are known.
(⇒ [Login](#))
- download updated licenses for Artist-1024 frames.
(⇒ [Downloading License](#))
- extend VAE and F-VAE licenses on Artist-1024 frames.
(⇒ [Extending License](#))
- move of F-VAE-Licenses between Artist-1024 frames.
(⇒ [Moving License](#))

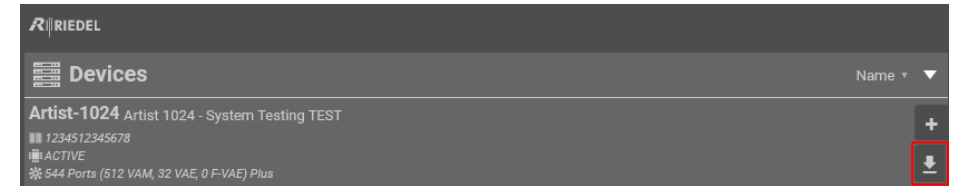
5.5.1 Login

- Navigate to following URL:
<https://license.riedel.net/>
- Enter email (username).
- Enter password.
- Click on "Login".

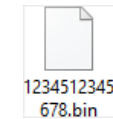


5.5.2 Downloading License

- Click on the left side in the "Devices" area on the download button of the Artist-1024 frame whose license you want to download.



- The license is stored in the default download directory of the browser.
- The file name consists of the 13 digit serial number of the corresponding Artist-1024 frame with the file extension ".bin".
- Each license file can only be read by the Artist 1024 frame with the corresponding serial number.

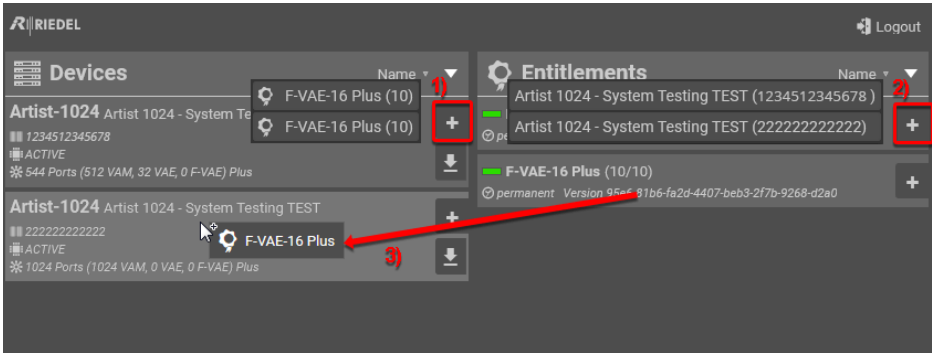


5.5.3 Extending License

Artist-1024 ports can be extended by VAE and F-VAE licenses.

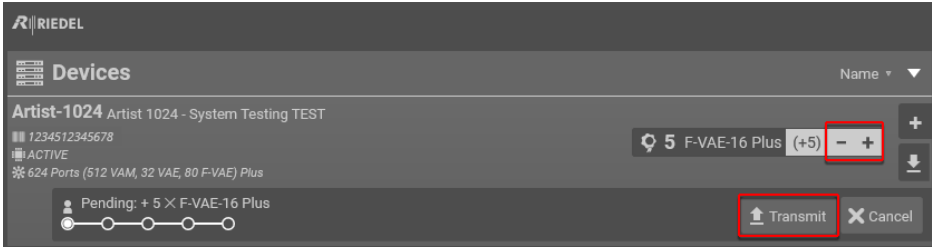
➤ Assign new licenses to the Artist-1024 frame. There are three different ways to do this:

- 1) Click on the plus button of the Artist-1024 frame whose license you want to extend on the left side in the "Devices" area.
- 2) Click on the plus button of the license you want to assign to an Artist-1024 frame in the "Entitlements" area on the right side.
- 3) Drag and drop the license from the right "Entitlements" area onto the Artist-1024 frame in the left "Devices" area.

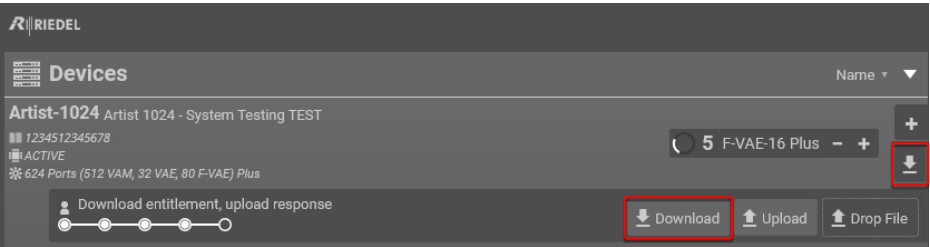


- Use the **plus/minus** buttons to select the number of licenses.
- Transfer your entry to the **Riedel License Manager** by clicking the **Transmit** button.

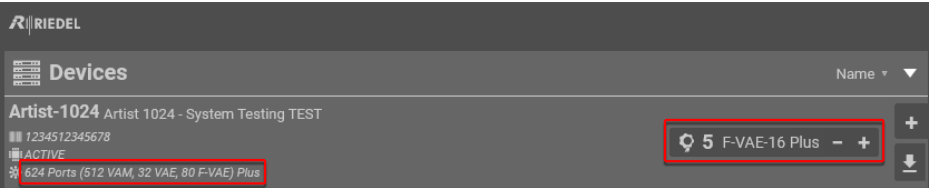
The number of available and assigned licenses is updated and a new license file is generated.



- Download the new Artist-1024 license file (⇒ [Downloading License](#)) and install it on the corresponding Artist-1024 frame (⇒ [Installing License](#)).



The updated number of licenses is displayed in the **Riedel License Manager**.

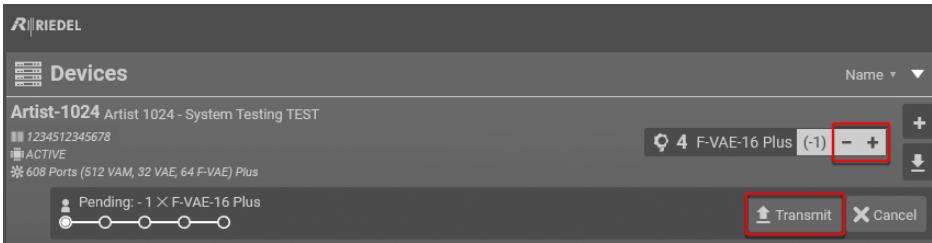


5.5.4 Moving License

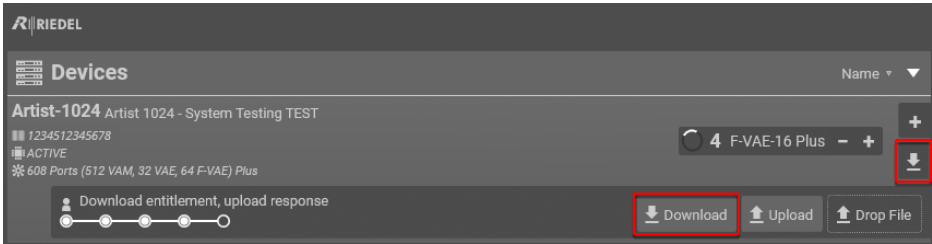
F-VAE licenses can be moved between Artist-1024 frames.

- Use the **plus/minus** buttons to select the number of licenses to be removed from the Artist-1024 frame.
- Transfer your entry to the **Riedel License Manager** by clicking the **Transmit** button.

The **Riedel License Manager** generates a new license file with updated number of licenses for this Artist-1024.

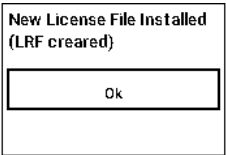


- Download the new license file (⇒ [Downloading License](#)) and copy it to a USB stick.

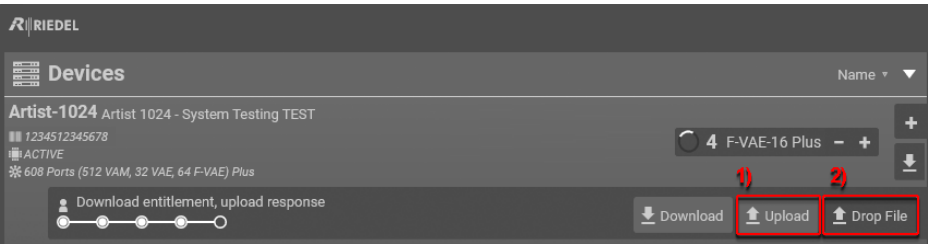


- Install the license file on the corresponding Artist-1024 frame (⇒ [Installing License](#)).

The Artist-1024 updates the number of licenses and stores the removed licenses in a License Response File (LRF) on the USB stick.

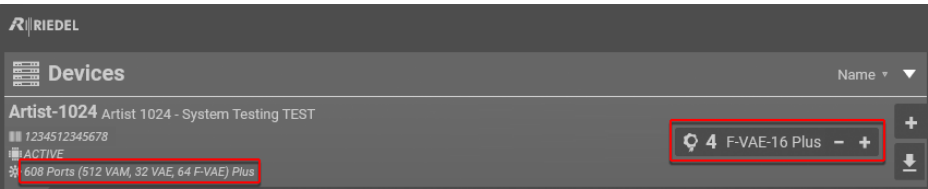


- Insert the USB stick with the license response file into your PC,
- Upload this license response file to the **Riedel License Manager**. There are two different ways to do this:
 - 1) Click on the **upload** button of the Artist-1024 frame whose license you have removed and select the license response file on the USB stick for upload.
 - 2) Drag and drop the license response file into the "Drop File" area of the Artist-1024 frame whose license you have removed.



After uploading, the **Riedel License Manager** updates the number of returned licenses.

Now the number of licenses can be extended on another Artist-1024 (⇒ [Extending License](#)) and then installed (⇒ [Installing License](#)).



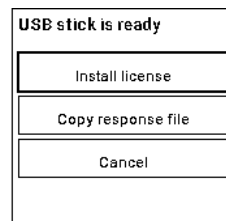
5.6 Installing License



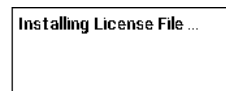
The name of the license file needs to be equal to the serial number of the Artist-frame where the license will be installed.

- Format an USB pen drive in the FAT32 or NTFS file format.
- Create the following folder structure: "\\Riedel\\Artist-1024".
- Copy the previously downloaded license file into that folder.
The folder can contain multiple license files. Each Artist-1024 frame will pick its corresponding license file.
- Power up the Artist-1024.
- Insert the USB pen drive (possibly via a USB-C adapter) into the USB connector of the NIC (**N**etwork **I**nterface **C**ard).

- Select the option "Install license" to activate the license.

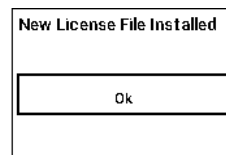


- The Artist-1024 will install the respective license.



The license was installed successfully.

- Select "OK" to return to the default view.



6 Appendix

6.1 Glossary

AES67	"AES67" in this manual refers to the standards SMPTE ST 2110-30 (see also SMPTE 2110).
Bay	Position of the card in the Artist-1024 frame.
DHCP	Dynamic Host Configuration Protocol. The IP-Address, Subnet Mask and DNS-Address of network devices can be automatically assigned by the DHSC-Server.
DNS	DNS (Domain Name System) allows identifying a network user by a unique name. The associated IP-Address is stored in a DNS-Server.
DSP	Digital Signal Processor. A fast central processing unit especially for digital audio applications.
FOM	Fiber Optic Modem (also known as SFP)
Frame	A single Artist-1024 without interface cards.
GPI	General Purpose Interface (Inputs and Outputs). An interface for electrical signals (contact information, e.g. Relays).
NEC	Network Extension Card – Interface for synchronization.
Net	The complete local communication system, which can consist of one or more nodes (connected via fiber).
NIC	Network Interface Card – Interface to connect multiple Artist frames.
Node	A single Artist-1024 with interface cards to which the individual subscribers, audio connections, GPIs and fibre optic connections can be connected.
PNIC	Primary NIC (Bay 3, independent if active or standby)
Port	Analog or digital interface to the node to connect i.e. Panels or 4-Wires.
SFP	Small Form-factor Pluggable transceiver - extractable optical or electrical transmitter/receiver module
SIC	Subscriber Interface Card – Interface for AES67- / MADl streams.
SIP	SIP (Session Initiation Protocol) is a Network protocol to connect, control and disconnect a communication session between one or more subscriber (common protocol by IP phones).
SMPTE 2110	SMPTE ST 2110-30 is a standard of the Society of Motion Picture and Television Engineers (SMPTE) that describes digital audio transmission. (See also AES67.)
SNC	Sync Network Card
SNIC	Secondary NIC (Bay 8, independent if active or standby)
TCP/IP	Transmission Control Protocol/Internet Protocol. Standard Network Protocol for Data transmission, i.e. for the Internet.
TCP	Transmission Control Protocol. Reliable, connection oriented, packet-switched used in PC networks. Part of the basic internet protocols.
UIC	Universal Interface Card – The function of the card is determined by the slot position and license.

UDP	User Datagram Protocol. Standard Network Protocol for Data transmission, i.e. for the Internet. UDP offers a connectionless, non-reliable data transmission. There is no guaranty that a sent packet will be received or packets will be received in the same order of transmitting. Applications using UDP need to be robust against loss or unsorted packets or need to have corrections implemented.
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6.2 Maintenance Recommendations

Following points are strongly recommended to prevent malfunction of the system.

General

- Front plates of frames must be closed.
- Unloaded bays of frames must be covered by blind plates.
- Check if all fans are running. In case of malfunction an alarm is generated in the Director.
- Check Director screen log and Alarm Window for unexpected warnings and errors.
- A permanently connected PC running the Director Configuration Software set to "Full Log" and 20 files of 10 MB each is recommended.
- Set "Autosave" in the Director software.

Warning	
	LASER CLASS 1 PRODUCT APPAREIL A LASER DE CLASSE 1 LASER KLASSE 1 PRODUKT • Because invisible radiation might be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures. • Do not look at fibers that connect to unknown sources. • Do not examine unterminated optical ports with optical instruments. • Avoid direct exposure to the beam.

Daily

- See if power is attached to both power supply units.

Weekly

None

Monthly

- Check fan dust filters and exchange them if necessary.
- Set System time (by Director to PC time).

Yearly

None

Other

- Every three years, the fan filters should be exchanged due to an aging process even if they are not dusty or if the system was not in operation.

6.3 Service

If you have any further questions, we offer comprehensive customer service options for this product including:

- Telephone Service
- Email Service
- Fax Service
- Configuration Support
- Trainings
- Repair

Your primary point of contact for any service issues is your local dealer.
In addition, Riedel Customer Service in Wuppertal, Germany is also available to assist you.

Telephone: +49 (0) 202 292 9400
(Monday - Friday, 8am – 5pm, Central European Time)

Fax: +49 (0) 202 292 9419

Or use the contact form on our website:
www.riedel.net > Services > Support

For repairs, please contact your local dealer. Your dealer will be able to help process your repair as fast as possible and/or arrange for the delivery of spare parts.

The address for repairs sent directly to Riedel Communications GmbH is:

Riedel Communications GmbH & Co. KG
- Repairs -
Uellendahler Str. 353
D-42109 Wuppertal
Germany

Please add a completed repair form to all your repairs.
The form can be found at the Riedel website:
www.riedel.net > Services > Repairs

Keyword Index

- 1 -

1200 series 17

- 2 -

2300 series 17

- 4 -

4-Wire 17

4-Wire (In and Out) 17

4-Wire split (separated In and Out) 17

- A -

About Artist-1024 8

AES67 4-Wire 17

AES67 Input 17

AES67 Output 17

AES67 split (separated In and Out) 17

AES67 Trunkline 17

Artist-1024 Node 9

- B -

Battery Safety 4

Bedienung 11

Bolero Wireless Beltpack 17

- C -

Cable 21

Cable length 21

CE Declaration 4

Change History 7

Checking the Firmware Version 7

Configuration Support 30

Connector 21

contact 30

- D -

Display Content 10

Disposal 4, 6

Downloading License (Riedel License Manager) 25

DSP-2312 (BASIC, PLUS) 17

- E -

Email 30

Environment 4, 5

ESD Safety 5

ESP-1216HL 17

Extending License (Riedel License Manager) 26

- F -

Fan Unit (FAN-1024) 13

FAN-1024 (Fan Unit) 13

Fax 30

Firmware-Version 7

First Steps (Licensing) 23

Flexera User Portal 23

Flexera User Portal (Forgotten Password) 24

Flexera User Portal (Login) 23

Flexera User Portal (User Profile & Security) 24

Flexible - Virtual Artist Expansion License 22

Flexible License 23

Forgotten Password (Flexera User Portal) 24

Frame (MFR-1024) 9

FRF-1024(Front Filter) 12

Front Filter (FRF-1024) 12

Front-Filter (Replacing) 18

F-VAE 22

- I -

Info Display 10

Information 4

Installation Options 14

Installing License 28

- L -

Laser Safety 4, 6

LED Wedge (WDG-1024) 12

License Model 22

Licensing 22

Licensing (First Steps) 23

Login (Flexera User Portal) 23

Login (Riedel License Manager) 25

- M -

Maintenance Recommendations 30

MFR-1024 (Frame) 9

Miscellaneous 17

Moving License (Riedel License Manager) 27

- N -

NIC 11

NIC (UIC-128) 16

NIC Redundancy 18

- P -

point of contact 30

Port Types 17

Power Supply (PSU-1024) 13

Preface 4

- R -

Rear-Filter (Replacing) 19

Recommended SFPs 21

Repair 30

Replacing Front-Filter 18

Replacing Rear-Filter 19

Reversing the Airflow 19

Riedel License Manager (Downloading License) 25

Riedel License Manager (Login) 25

Riedel License Manager (Moving License) 27

Riedel License Manager Extending License) 26

Riedel-Lizenz-Manager 25

RSP-1216HL 17

RSP-1232HL 17

RSP-2318 (BASIC, PLUS, PRO) 17

- S -

Safety Instructions 5

Service 4, 5, 30

SIC 11

SIC (UIC-128) 16

Symbols 4

- T -

Technical Drawing (MFR-1024) 14

Technical Specifications (Cards) (UIC-128) 17

Technische Spezifikationen (Frame) 15

Telephone 30

Trainings 30

Type 21

- U -

UIC-128 16

UIC-128 as NIC 16

UIC-128 as SIC 16

User Profile & Security (Flexera User Portal) 24

- V -

VAE 22

VAM 22

Ventilation 4, 5

Virtual Artist Expansion License 22

Virtual Artist Matrix License 22

Voltage 4, 5

- W -

WDG-1024 (LED Wedge) 12

