Owners' Manual

FERROFISH VERTO^{32}, VERTO^{64} & VERTO^{MX}
Professional ADAT / MADI <> Dante Converter

FERROFISH
advanced audio applications

FERROFISH GmbH – Brüderstrasse 10, 53545 Linz am Rhein
www.FERROFISH.com

Version 2.0i

IMPORTANT SAFETY INSTRUCTIONS

Safety symbols used in this manual:

This symbol alerts that there are important maintenance and operating instructions in the literature.

This symbol warns the user of uninsulated potentially dangerous voltage inside the unit that can cause an electric shock.

This symbol warns the user that the output connectors of the power supply contain voltages that can cause dangerous potentially lethal shocks.

- o **Read** these instructions
- o **Keep** these instructions
- o **Heed** all warnings.
- o **Follow** all instructions.

1. Do not use this device near water.
2. Clean only with a dry cloth. Do not spray liquid cleaner onto the faceplate or into the ventilation slots. This may damage the front panel or cause a dangerous condition.
3. Only install in accordance with the instructions of the manufacturer.
4. Do not install or operate near heat sources as stoves, radiators or other devices that may produce heat.
5. NEVER defeat the safety purpose of the grounding plug type. When the provided plug doesn't fit into the outlet, please consult a qualified electrician for further help.
6. Use power adaptors and accessories specified by the manufacturer only.
7. Protect the power cord from being pinched or walked on.
8. Unplug this device during lightning storms or when not in use for longer periods of time.
9. Refer all servicing to qualified service personnel only. Servicing is required when the device has been damaged in any way, such as when liquids have been spilled of objects have been fallen into the device or the device has been dropped. Also, when the device does no longer work normally or has been exposed to rain or moisture.
10. This unit generates heat when operated normally. Operate in a well-ventilated environment with at least 1RU space between any other peripheral equipment.
11. The product in combination with headphones or other external amplifiers and speakers may produce sound levels that could lead to a permanent hearing loss. Do not operate at higher or uncomfortable volume levels for a longer time. If you are experiencing ringing in your ears, a loss of high frequency sound information or other hearing loss, please contact an audiologist immediately.
12. WARNING: To reduce the risk of an electric shock or fire, do not expose the device to rain or moisture.
13. This power supply of this audio device may cause electronic interference to surrounding objects. If you find that this or any surrounding unit is malfunctioning, try resetting the device, relocating it or a install a powerline conditioner by an electrician.
14. Always use a stand, 19" rack or table designed for the use of pro audio equipment. In a permanent installation make sure that damage or even injury will not result from the mounting of the device or from cables pulling on the device. When using a cart, use caution when moving the device inside the cart to avoid injury from tipping-over.

Introduction

Dear customer,

thank you for purchasing our product. We are very pleased that you have chosen the VERTO series from our product range. It is designed as an easy format converter between ADAT (VERTO^{32} & VERTO^{64}) or MADI (VERTO^{MX}) and the DANTE protocol. We have developed three different models so that you can choose the one most suited to your needs. The VERTO^{32} and VERTO^{64} have 32x32 and 64x64 I/O channels respectively, for an easy integration of devices with ADAT ports. When using MADI devices the VERTO^{MX} is the perfect solution; offering both optical and coaxial MADI I/O ports. All VERTO models also incorporate MIDI I/O for updating the devices' internal firmware. So it's possible to transmit 64x64 audio channels up to 2km with the Multimode MADI module. It is even possible to bridge distances of up to 10km via glass fiber with the optional singlemode MADI module, which can be installed easily by the VERTOs' owner.

We sincerely hope that you will enjoy using your VERTO as much as we enjoyed developing it. Should you have any suggestions, praise or criticism for us please visit us on Facebook or at www.FERROFISH.com.

Best regards from Linz on Rhine. The FERROFISH Team

Scope of Delivery
1x VERTO Converter
1x Owners' Manual
1x Power Supply 12V
1x LC / SC Adapter Cable (VERTO^{MX} only)
1x ADAT Cables Locking Plate including Mounting Accessories (VERTO^{32} only)
2x ADAT Cables Locking Plate including Mounting Accessories (VERTO^{64} only)
(Fitting of locking plates only guaranteed when using FERROFISH ADAT cables)

Product description:

The VERTO series serve as digital format converters for your ADAT or MADI devices. They make the integration of existing gear into a DANTE environment quick and easy. All essential settings are made via DANTE. The fan-less and low heat-generating design also makes the VERTO series perfect for installation in acoustically sensitive environments.

Front panel VERTO^{32} und VERTO^{64}

LEDs and operating elements are explained as follows (left to right):

1. **DANTE LED:** The DANTE LED indicates the state of the DANTE network. When the LED is lit permanently, a connection to the DANTE network exists. A flashing LED indicates that DANTE has muted all channels. This may have been caused by e.g., a missing network signal or a change of the sample rate inside the DANTE network.
2. **ADAT Inputs** (VERTO 32: 1-4, VERTO 64: 1-8): These status LEDs indicate when an ADAT input has been successfully synchronized to the DANTE network's word clock. These LEDs are not input indicators. If the LED flashes, the synchronization process has failed. If it is lit continuously, interrupted by short flickering, both devices are set to „master / leader".
3. **Power LED:** The LED lights up continuously when the device is switched on and ready for operation. It flashes slowly when the device is booting. If you hold down the power button, the LED will rapidly flash to indicate the imminent shutdown of the device.
4. **Power button:** This button turns the VERTO on or off. To switch off the unit, press and hold the button for at least 3 seconds.

Front panel VERTO^{MX}

LEDs and operating elements are explained as follows (left to right):

1. **DANTE LED:** The DANTE LED indicates the state of the DANTE network. When the LED is lit permanently, a connection to the DANTE network exists. A flashing LED indicates that DANTE has muted all channels. This may have been caused by e.g. a missing network signal or a change of the sample rate in the DANTE network.

2. **MADI Input (optical):** This status LED is permanently lit when the optical MADI input receives a valid signal and the VERTO has successfully synchronized to it. It is not an input indicator for MADI signals. If the LED flashes, the synchronization process has failed. If it is lit continuously, interrupted by short flickering, both devices are set to „master / leader".

3. **MADI Input (coax):** This status LED is permanently lit when the coaxial MADI input receives a valid signal and the VERTO has successfully synchronized to it. The LED is not an input indicator for MADI signals. If the LED flashes, the synchronization process has failed. If the LED is lit continuously, interrupted by short flickering, both devices are set to „master / leader". If the LED is lit with half brightness a valid signal is detected at both MADI inputs, but MADI optical is used.

4. **Sample rate - LEDs:** These show the sample rate of the DANTE network.

5. **Power LED:** The LED lights up continuously when the device is switched on and ready for operation. It flashes slowly when the device is booting. If you hold down the power button, the LED will rapidly flash to indicate the imminent shutdown of the device.

6. **Power button:** This button turns the VERTO on or off. To switch off the unit, press and hold the button for at least 3 seconds.

> If a valid MADI signal is present on the optical and the coaxial port at the same time, the optical port is automatically being used for conversion to DANTE.
> If you want to use the coaxial MADI input please remove the optical MADI cable.

Rear plate VERTO^{32} und VERTO^{64}

Connections of the VERTO^{32} & VERTO^{64} explained as follows (left to right):

1. **Power supply:** Connect the power supply here and lock it with the coupling nut. Thus, the plug cannot slip out unintentionally.

2. **ADAT I/Os:** Connect your ADAT devices using optical Toslink cables. The black flaps are ADAT inputs, the white flaps are outputs. Use the included locking plates to avoid unintentional slip out of the Toslink connectors.

3. **MIDI I/O:** These ports let you update the device' firmware.

4. **WORDCLOCK I/O:** Transmit or receive word clock to or from the VERTO using these connectors. We recommend setting the connected devices to "slave / follower".

5. **DANTE (PRI/SEC):** Use this port to connect the unit to a DANTE network. Use a commercially available Ethernet cable (at least CAT5 or better) and connect it to the PRI (primary) port. Use the SEC port for a redundant network. For more information about redundant operation please visit: www.audinate.com

Rear plate VERTO^{MX}

The connections of the VERTO^{MX} are explained as follows (left to right):

1. **Power supply:** Connect the power supply here and lock it with the coupling nut. Thus, the plug cannot slip out unintentionally.

2. **MADI I/O (coaxial):** Use these connectors for devices with coaxial BNC MADI.

3. **MADI I/O (optical):** Connect your optical fiber MADI equipment to these ports. Depending on the specification of your MADI equipment, this can be done either directly at the device via the LC connector or via the included SC-LC adaptor.

> If a valid MADI signal is present on the optical and the coaxial port at the same time, the optical port is automatically being used for conversion to DANTE. If you want to use the coaxial MADI input please remove the optical MADI cable.

4. **MIDI I/O:** These ports let you update the device' firmware.

5. **WORDCLOCK I/O:** Transmit word clock to or from the VERTO using these connectors. We recommend setting connected devices to „slave / follower".

6. **DANTE (PRI/SEC):** Use this port to connect the unit to a DANTE network. Use a regular Ethernet cable (at least CAT5 or better) and connect it to the PRI (primary) port. Use the SEC port for a redundant network. For more information about redundant operation please visit: www.audinate.com

Clocking (IMPORTANT!)

Generally, in a network of DANTE devices, at least one of them should be set to „master / leader". Therefore set all devices connected to the BNC/Wordclock port of the VERTO should be set to „slave / follower". If there are several DANTE devices connected to a network, then set your preferred device to *„Preferred Master"* inside Dante Controller.

In some cases the DANTE network may need to be set to "slave / follower". In this case, uncheck "*Preferred Master*" on the VERTO in the Dante controller and check "*enable sync to external*". Then feed a word clock signal to the VERTO via the BNC IN connector. The word clock signal must be very accurate in this case, otherwise drop-outs and clicks may occur.

Please note that the VERTO cannot generate a word clock signal from a MADI or ADAT audio stream. Connecting devices that can only run as wordclock master and not providing any wordclock output cannot be connected to a VERTO.

Operation

Operating the VERTO series is simple. Connect the included power supply to the corresponding connector on the back of the VERTO. Connect the ADAT (VERTO^{32} and ^{64}) or MADI (VERTO^{MX}) devices to their respective ports on the back panel. Lastly, connect an Ethernet cable (at least CAT5 or better) to an existing DANTE network or to a computer with *Dante Virtual Soundcard* (DVS) installed (for example) and the free *Dante Controller* application from Audinate.

All settings (I/O routing, bit depth, sample rate etc.) of the VERTO are being set at the *Dante Controller* application from Audinate. To download *Dante Controller* please visit: www.audinate.com

Technical specifications

DANTE I/O:	2x Ethernet jacks (PRI/SEC), 1GBit 64x64 channel Brooklyn Series Board built-in
ADAT I/O: (VERTO^{32} & VERTO^{64} only)	4x4 optical Toslink ADAT Ports (VERTO^{32}) 32x32 channels at 48kHz, 16x16 channels at 96kHz 8x8 optical Toslink ADAT Ports (VERTO^{64}) 64x64 channels at 48kHz, 32x32 channels at 96kHz
MADI I/O: *(AES10)* *(VERTO^{MX})*	SFP Slot for single- or multimode MADI SFP-module, 2x BNC MADI Multimode module installed by default, long frame (64Ch) output 64x64 channels at 44.1kHz to 48kHz 32x32 channels at 88.2kHz to 96kHz 16x16 channels at 176.4kHz to 192kHz
Wordclock:	2 x BNC In / Out, male 75 Ohm input termination enabled by default
MIDI I/O:	MIDI Standard 1.0 / 1996 2 x DIN 5pin jacks In / Out
Fuse:	Polyfuse, internal, self-resetting
Power Req.:	14.4VA (1.2A at 12V DC)
Operat. Temp:	+5°C to +45°C
Humidity:	<75%, non-condensing
Dimensions:	22 x 09 x 4,5 cm (without rack-mounts)
Weight:	0,9kg

Troubleshooting

Error	Possible cause	Troubleshooting
POWER LED does not light up.	Power supply not plugged in or defective.	Check the power supply.
	The device is switched off.	Switch on the device with the power button.
POWER LED flashes quickly.	POWER button pressed. (POWER LED flashing quickly indicated a shutdown of the unit in the next seconds.)	The POWER LED flashes quickly when the power button is pressed on a switched-on device.
POWER LED flashes slowly.	POWER button pressed.	A slowly flashing POWER LED indicates that the VERTO is booting. Wait approx. 20s for the boot-up-sequence to finish.
DANTE LED does not light up. (see Power LED)	Mains cable defective or the wrong type (crossed) is used.	Use a different network cable.
	VERTO is booting.	Wait approximately 20s until the boot process is finished.
	Error inside the Dante network.	Check the function of the Dante network.
DANTE LED is flashing.	No connection to the Dante network.	Check the function of the Dante network.
	Device is set to „Slave / Follower", but no „Master / Leader" device was found on the Dante Network.	Set one device of the Dante Network to „Master / Leader".
	Sample rate on the network has been changed.	While changing sample rate, the outputs are being muted for a short time. This is normal.
MADI coaxial LED lights low.	Both ports (opto & coax) receive a valid signal. This is a status indication, not an error.	Both signals are valid, but the optical port is automatically used for DANTE.
ADAT Input LED flashes.	The sync process between ADAT and Dante has failed.	Set all connected ADAT devices to „Slave / Follower".
ADAT Input LED is lit constantly, regularly interrupted by regular flickering.	Both devices of the digital networks are set to „Master / Leader".	Set all connected ADAT devices to „Slave / Follower".

CE conformity

EMC

This device fully complies to all harmonized standards for the approximation of laws of the member states for the electromechanical compatibility (EMC:2014/30/EU) and European Low Voltage Directive 2014/35/EU.

RoHS

This device has been produced with lead free solder according to the EU directive 2011/65/EU and therein contained maximum permissible values for hazardous substances found in electronic devices.

FCC Declaration

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.

Responsible Party in the USA: SYNTHAX United States, 6600 NW 16th Street, Suite 10, Ft. Lauderdale, Florida, 33313 T.:754.206.4220 Trade Name: FERROFISH, Model Numbers: VERTO.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Any modifications or other changes to this unit not approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note on Waste Disposal (WEEE)

According to common law of the EU states directive RL2002/96/EG (WEEE – Directive on Waste Electrical and Electronic Equipment) this product must be recycled after final use and/or end of its lifetime. In case a disposal of electronic waste is not possible, the recycling can also be done by the manufacturer. For this the device has to be sent **free to the door** to: FERROFISH GmbH, Brüderstraße 10, 53545 D-Linz / Rhein.

Any un-prepaid shipping will be rejected and returned on the senders' costs.

Service

No serviceable parts inside. Do not open this device.

Legal information

Limited Warranty

Every VERTO is thoroughly checked and tested. FERROFISH grants a limited warranty of two years after purchase thru an authorized dealer or distributor. The invoice is needed as a proof-of-purchase.

In case of a permanent malfunction or any other defect under this limited warranty that can't be fixed by support, please contact your dealer and inquire a repair under warranty.

Damages caused by improper installation or inappropriate usage are not covered by this limited warranty. Fixing these damages will be liable to pay costs.

Claim for damages of any kind, in particular consequential damage or loss are not covered. A liability exceeding the merchandise value of an VERTO is also not covered. We refer to the general terms and conditions of FERROFISH GmbH.

Disclaimer of liability

This documentation has been created to the best of knowledge and belief on the current state of technology. FERROFISH assumes no responsibility either expressed or implied for the accuracy, completeness and correctness of this documentation.

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FERROFISH reserves the right to change specifications at any time without prior notice. Product and documentation are subject to the terms and conditions of FERROFISH GmbH at the latest state.

Thank you for reading this manual completely. We are very pleased.
Goodbye and "thanks for the fish" – your team from FERROFISH.

Notes:

FERROFISH
advanced audio applications

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