FERROFISH
advanced audio applications

VERTOPRO DANTE

ADAT · MADI · Dante Digital Converter & Router

Manual for

VERTOpro 32 Dante | VERTOpro 64 Dante | VERTOpro MX Dante



Version 1.0

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About this manual

This manual describes the models VERTOpro 32 Dante, VERTOpro 64 Dante and VERTOpro MX Dante. Sections that apply only to a particular model are marked accordingly. Technical changes as well as changes to features, equipment, and specifications are subject to change without notice.

Introduction

Dear users,

Thank you for choosing a digital converter from the VERTOpro series.

Depending on the model, the VERTOpro provides a compact solution for connecting ADAT (VERTOpro 32 and VERTOpro 64) or MADI (VERTOpro MX) to a Dante network. On the VERTOpro 32 and VERTOpro 64, MADI is also available as an optional upgrade.

A flexible routing matrix and intuitive operation via the color display enable easy integration into professional audio and network environments.

Our goal is to provide a reliable and easy-to-use tool for studio, broadcast, live, and fixed-installation applications. We hope you enjoy using the device as much as we enjoyed developing it.

If you have any questions, suggestions, or technical issues, please contact our support team at info@ferrofish.de.

Your Ferrofish Team

Safety Instructions

Safety Instructions



Safety information:
Read and follow these instructions. Observe all warning and safety instructions and keep this manual.

▶ ATTENTION!

When used with headphones, amplifiers, or loudspeakers, this device can produce sound levels that may damage your hearing after prolonged exposure. Avoid uncomfortable or continuously high listening levels. If you notice any signs of hearing damage, seek medical attention immediately.

▶ WARNING!

To reduce the risk of electric shock, do not expose the device, power supply, or power cable to moisture.

Do not operate the device or power supply near water or in environments where condensation may occur. Do not place containers filled with liquid on the device. Avoid direct contact with liquids, and do not spray the device or power supply with liquids of any kind. Doing so may damage the device.

Use only a dry cloth for cleaning. The device is maintenance-free.

Never cover or block the ventilation openings, as this may cause the device to overheat. Disconnect the device from the mains when it will not be used for an extended period and during thunderstorms.

Use the device only in its intended voltage range. You will find it printed on the power supply.

If you are not sure which mains voltage prevails in your application area, contact your local energy supply company. If the plug of the supplied power supply does not fit into the power socket, contact an electrician. Use only manufacturer-approved power supplies, spare parts and other accessories. Other power supplies can cause the device to malfunction or damage it.

Observe the maximum electrical load capacity of your operating environment. Do not exceed this limit, as overloading can lead to fires. Do not make any electrical or other modifications in the device or power supply, otherwise the device will lose its CE Conformity. Do not insert objects or foreign bodies through the vents of the device. This could lead to a short circuit inside the device and a defect. Only operate the device in safe positions. Prevent the device from falling, which can lead to injury to people or damage to the device.

All service work and repairs are to be carried out only by a customer service authorized by the manufacturer. Service work is necessary once the device or its power supply has been damaged in any way, such as:

- Damage to the power supply or power cable.
- Liquid or an object has entered the device.
- The apparatus was exposed to moisture.
- The device is not working normally or has been dropped.

Contact your dealer and/or the manufacturer for a repair.

Important: The device produces heat. Please check if the device is excessively warm when used and ensure that the resulting heat is sufficiently dissipated!

Models and Package Contents

Model variants

Model	ADAT	MADI	Dante
VERTOpro 32	4 × IN/OUT 32 × 32 channels	2 slots MADI optional	64 × 64
VERTOpro 64	8 × IN/OUT 64 × 64 channels	2 slots MADI optional	64 × 64
VERTOpro MX	-	2 slots MADI activated	64 × 64

Note: The channel numbers in the overview apply at sample rates up to 48 kHz. At higher sample rates, the number of available channels is reduced accordingly.

Package Contents

- VERTOpro
- Manual
- Power Supply 12 V
- 2 × MADI SFP module, multimode (VERTOpro MX only)
- LC/SC MADI cable (VERTOpro MX only)

MADI Equipment and Expansion

The VERTOpro MX is supplied with MADI functionality enabled and two pre-installed Ferrofish multimode MADI SFP modules. The modules can be replaced if required.

Ferrofish-MADI SFP modules are currently available in the following versions:

* Multimode, optical: range up to 2 km
* Single-mode, optical: range up to 10 km
* Coaxial, electrical: range up to 100 m

The actual transmission distance depends on the cables used and the quality of the connection. We recommend using only original Ferrofish MADI SFP modules.

The VERTOpro 32 and VERTOpro 64 feature two slots for optional MADI SFP modules. MADI SFP modules are not included, and MADI functionality is not enabled by default.

MADI functionality can be added later as an optional upgrade. The upgrade procedure is as follows:

- Insert one or two suitable Ferrofish MADI SFP modules.
- Purchase a MADI activation license (activation code), for example from the Ferrofish online shop.
- Enter the activation code in the device's MADI or SFP menu.
- After activation, configure the required MADI ports and their operating mode.

Important: **Use only MADI SFP modules approved by Ferrofish. Installing a MADI SFP module alone does not enable MADI functionality on the VERTOpro 32 or VERTOpro 64. A MADI activation license (activation code) is also required.**

Commissioning

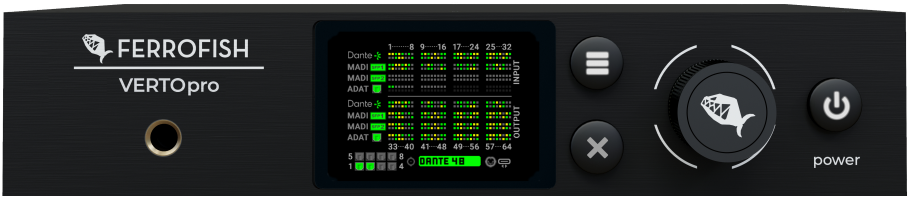
Place the VERTOpro on a stable, well-ventilated surface or mount the device securely in the rack. Turn off all devices involved before making audio and clock connections.

Connecting equipment

1. Connect the 12 V power supply provided with the device to the POWER socket and secure the connector with the locking nut.
2. On the VERTOpro MX, connect the installed MADI SFP modules using fiber-optic cables. On the VERTOpro 32 and VERTOpro 64, MADI functionality must first be added by installing a suitable Ferrofish MADI SFP module and activating the MADI license.
3. Connect the required ADAT inputs and outputs to the VERTOpro 32 or VERTOpro 64.
4. If required, connect WORDCLOCK IN or WORDCLOCK OUT.
5. Connect NETWORK PRI to the Dante network. Use SEC as required by the selected Switched or Redundant mode.
6. Connect USB or MIDI only when using RemoteFish, MIDI CC control, or performing a firmware update.
7. Turn on the connected peripherals and the VERTOpro.

Important: **Always insert and remove MADI SFP modules carefully. Do not use excessive force. Never disconnect a fiber-optic cable by pulling on the cable itself.**

Front Panel



Front panel, shown using the VERTOpro 64 as an example

1 Headphone output

The headphone output is operated by a high-quality DAC and amplifier module and is used to listen to selected digital input or output signals. To configure the headphone output, move the rotary encoder in the Main Screen. You can learn more about headphones in the following chapters.

2 TFT display

The color display shows the levels of the digital inputs and outputs, the selected clock source, the current sample rate and further status information.

3 MENU key (three bars)

Opens the menu or, depending on the current view, confirms a selection.

4 ESC key (X symbol)

Returns to the previous view or cancels an operation.

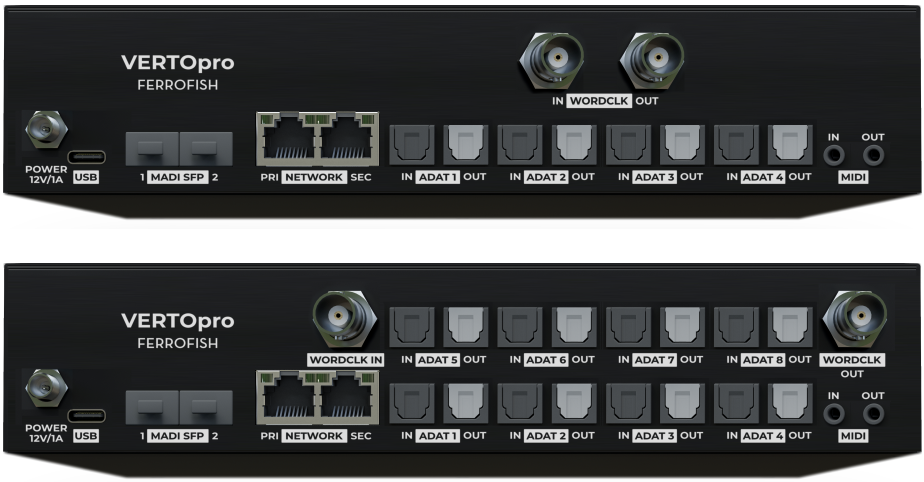
5 Rotary encoder

By turning, you navigate through menus or change values.

6 Power button

Turn the device on and off. To prevent accidental switch-off, the disconnect button must be held down for about three seconds.

Rear View



1 POWER input

Connect only the power supply provided with the device. Secure the connector by tightening the locking nut to prevent accidental disconnection.

2 USB-C port

The USB port is used for USB MIDI communication. If you connect the device to your PC or Mac, you can remotely control it using the RemoteFish software, or update the firmware with the Ferrofish UpdateTool. You can find both in the download section of the Ferrofish website. Please note that audio transmission via USB is not supported.

3 MADI SFP 1 and 2

Two slots for MADI SFP modules of the retrofittable MADI option. VERTOpro 32 and VERTOpro 64 are supplied without MADI SFP module and without MADI activation.

4 NETWORK PRI and SEC

Dante network connections for switched or redundant operation. AES67 is supported. Use a standard Ethernet cable (at least Cat 5e) and connect it to the "PRI" Ethernet connection. The "SEC" connection enables the connection to a second redundant network, which immediately takes over the operation if the network fails at the "PRI" Ethernet. More about redundant networks can be found at www.audinate.com.

5 WORDCLOCK IN/OUT

The WORDCLOCK IN socket receives an external word clock signal for synchronization with other digital devices. In the CLOCK view, set the clock source to BNC. The current clock signal is available at the WORDCLOCK OUT socket.

6 ADAT IN/OUT

Four (VERTOpro 32) or 8 (VERTOpro 64) optical ADAT inputs and a corresponding number of optical ADAT outputs for up to 32 × 32 channels (VERTOpro 32) or 64 × 64 channels (VERTOpro 64) at sample rates up to 48 kHz. At higher frequencies, the number of transmittable channels is reduced, as will be described later.

7 MIDI IN/OUT

MIDI connections use compact 3.5 mm jack sockets. Conventional 5-pin DIN MIDI cables can be connected using an adapter cable, available from retailers or from our online shop.

Rear view: VERTOpro MX



The VERTOpro MX is designed for applications where MADI and Dante need to be connected without additional ADAT interfaces. MADI functionality is enabled by default. Two multimode MADI SFP modules are included and pre-installed in the SFP slots.

1 POWER input

Connect only the power supply provided with the device. Secure the connector by tightening the locking nut to prevent accidental disconnection.

2 USB-C port

The USB port is used for USB MIDI communication. If you connect the device to your PC or Mac, you can remotely control it using the RemoteFish software, or update the firmware with the Ferrofish UpdateTool. You can find both in the download section of the Ferrofish website. Please note that audio transmission via USB is not supported.

3 MADI SFP 1 and 2

Two slots for MADI SFP modules for two independent MADI streams or a redundant MADI operation. Two multimode MADI SFP modules are included with the VERTOpro MX;

4 NETWORK PRI and SEC

Dante network connections for switched or redundant operation. AES67 is supported. Use a standard Ethernet cable (at least Cat 5e) and connect it to the "PRI" Ethernet connection. The "SEC" connection enables the connection to a second redundant network, which immediately takes over the operation if the network fails at the "PRI" Ethernet. More about redundant networks can be found at www.audinate.com.

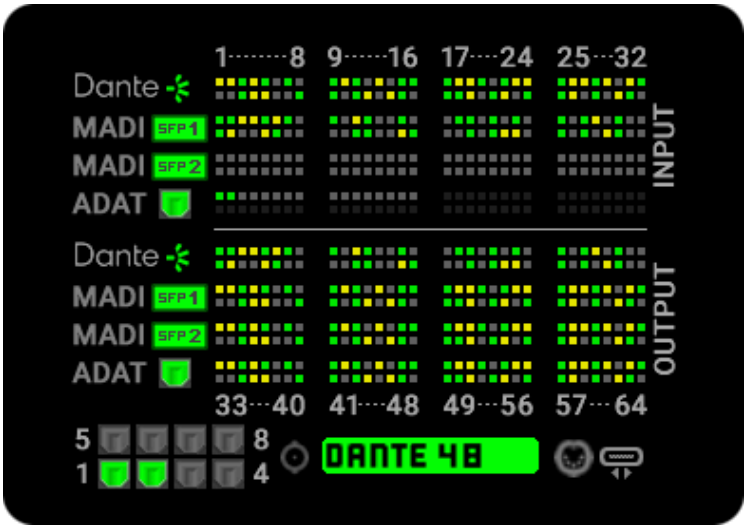
5 WORDCLOCK IN/OUT

The WORDCLOCK IN socket receives an external word clock signal for synchronization with other digital devices. In the CLOCK view, set the clock source to BNC. The current clock signal is available at the WORDCLOCK OUT socket.

6 MIDI IN/OUT

MIDI connections use compact 3.5 mm jack sockets. Conventional 5-pin DIN MIDI cables can be connected using an adapter cable, available from retailers or from our online shop.

Main Screen



The visible interfaces in the Main Screen depend on the model

The main screen shows the activity of the digital inputs in the upper section and the digital outputs below. The indicators are arranged by interface and grouped in sets of eight channels. The channel numbers above and below the level indicators identify the channel range being displayed.

The colors of the level meters provide a quick overview of the signal levels:

Green:	Normal signal level
Yellow:	High signal level
Red:	Possible overload or clipping

Digital clipping should always be avoided. Therefore, make sure to maintain sufficient headroom below the maximum level.

Note: Additional views can be configured via the MAIN DISPLAY menu. Once configured, you can switch between them using the ESC button.

The status bar is located at the bottom of the screen:

The status of the available ADAT inputs is shown on the left, followed by the status of the Word Clock BNC input. The color of each socket provides a quick indication of the input signal status:

Color	Meaning
Gray:	No signal detected
Yellow:	Signal detected but not synchronized to the selected clock source
Green:	Signal detected and in use

In the middle, the selected synchronization source and the current sample rate are displayed. These can be selected in the CLOCK view, as will be described later. In the example shown, Dante is selected as the synchronization source and the sample rate is 48 kHz.

On the far right, the activity of the MIDI and USB connections is shown. When a USB connection to a computer has been established successfully, a connection icon appears.

Note: The number of displayed ADAT inputs depends on the respective VERTOpro model. In the VERTOpro MX, no ADAT is shown.

▸ *'NO LOCK'*

If the VERTOpro cannot synchronize to the selected clock source, the following error message appears:



Sample Rates and Channel Counts

All models support sample rates up to 192 kHz. As the sample rate increases, the number of simultaneously available channels is reduced.

Sample rate	Dante	MADI per SFP	VERTOpro 32 ADAT	VERTOpro 64 ADAT
up to 48 kHz SMUX/1	64 × 64	64 × 64	32 × 32	64 × 64
up to 96 kHz SMUX/2	32 × 32	32 × 32	16 × 16	32 × 32
up to 192 kHz SMUX/4	16 × 16	16 × 16	8 × 8	16 × 16

▸ *Two independent MADI streams*

If both MADI SFP ports are used independently (not redundantly), up to 128 input and 128 output channels are available at sample rates up to 48 kHz. Individual channels can be routed directly between MADI 1 and MADI 2 or to Dante and ADAT.

Important: The Dante interface provides a maximum of 64 × 64 channels at sample rates up to 48 kHz. Therefore, not all channels of two fully occupied MADI streams with 128 channels can be transmitted simultaneously via Dante. The same applies to higher sample rates.

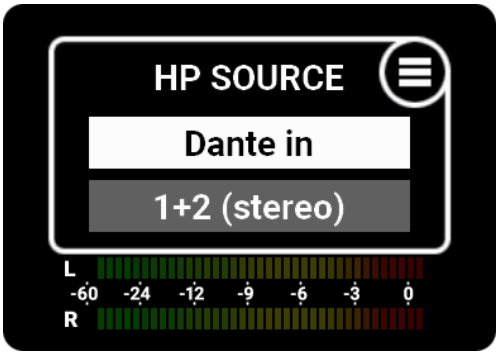
Headphones and Monitoring



Volume and level indicator

Digital signals can be monitored directly from the VERTOpro using the front-panel headphone output. The headphone signal path operates independently of the digital output routing.
To open the headphone screen, turn the rotary encoder while the Main Screen is displayed. Turn the encoder to adjust the headphone volume. Press and hold the MENU key to mute the headphone output.

▸ *Select Source*



Press the MENU key to select the headphone source. First select the interface you want to monitor. Press MENU again to open the channel selection, then turn the rotary encoder to select either a single mono channel or two adjacent channels as a stereo pair. Press ESC to leave the headphone screen.

Note: ADAT is only available at VERTOpro 32 and VERTOpro 64. The number of selectable channels depends on the current sample rate.

Note: Selecting a headphone source does not change a connection in the routing matrix. A signal can therefore be intercepted without influencing the ongoing audio transmission between Dante, MADI and ADAT.

Note: "MADI1" refers to SFP Port 1, while "MADI2" refers to SFP Port 2. When Redundancy is selected in the MADI settings (with either SFP1 or SFP2 having priority), "MADI" refers to the currently active SFP port.

Important: The headphone output may produce very high sound levels depending on the connected headphones, which can damage your hearing. Use the HP SETUP menu to set an appropriate maximum headphone level.

Main Menu



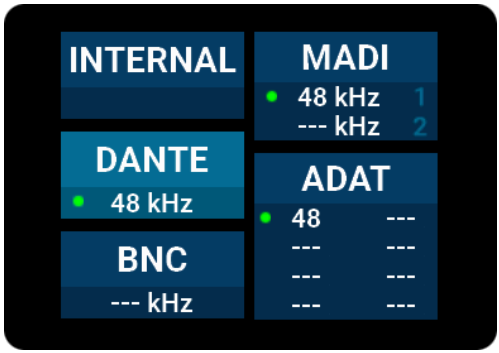
Main Menu of the VERTOpro

On the Main Screen, press the MENU key to open the Main Menu. Turn the rotary encoder to select a function, then press MENU again to confirm. Press ESC to return to the previous view.

The main menu provides access to the following areas:

CLOCK	Clock source and sample rate setting
HP SETUP	Headphone settings
PRESET	Loading and saving of the eight presets
SETUP	Further settings in the setup menu (see the following pages)
DANTE	Information about the Dante status
DISPLAY	Main Screen configuration
ROUTING	Connecting the inputs and outputs in the routing matrix

CLOCK



CLOCK view with the available clock sources

All devices in a digital audio system must operate at the same sample rate and use a common clock reference. One device acts as the Clock Leader; all other devices follow its clock. Incorrect clock settings can cause clicks, dropouts, or complete loss of the audio signal.

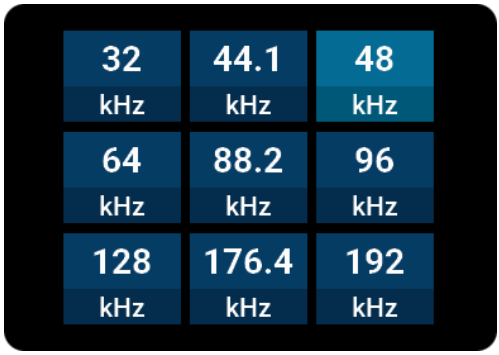
In the CLOCK view, you can set the clock source and the sample rate.

The detected sample rate is shown in the lower area of the corresponding button. If no valid frequency is detected, "—-" is displayed.

A colored dot to the left of the displayed sample rate indicates the status of the incoming signal:

A gray dot indicates that no signal has been detected. A yellow dot indicates that a signal is present but synchronization is not possible. A green dot indicates that the VERTOpro is synchronized to the signal and the source can be used.

The INTERNAL field shows the current sample rate of the VERTOpro internal Word Clock generator.



CLOCK view of internal sample rates

Press the MENU key again to open the view in which the internal sample rate can be selected when using INTERNAL clocking.



CLOCK view with detected input frequencies

For ADAT, MADI, and BNC, the corresponding view shows the sample rate detected at the selected input.
Because ADAT and MADI cannot automatically distinguish between the different SMUX modes, the appropriate mode can be selected manually here.

Please note that depending on the sample rate, the number of available channels is as follows:

Sample rate	Dante	MADI per SFP	VERTOpro 32 ADAT	VERTOpro 64 ADAT
up to 48 kHz SMUX/1	64 × 64	64 × 64	32 × 32	64 × 64
up to 96 kHz SMUX/2	32 × 32	32 × 32	16 × 16	32 × 32
up to 192 kHz SMUX/4	16 × 16	16 × 16	8 × 8	16 × 16

▸ *Operation with Dante as clock source*

Select DANTE as the clock source on the VERTOpro. The Dante network automatically selects a device as Clock Leader. If required, a suitable device can be designated as Preferred Leader in Dante Controller.

The VERTOpro synchronizes to the Clock Leader of the Dante network and outputs the resulting system clock via its digital outputs and WORDCLOCK OUT. All devices connected via ADAT, MADI, or Word Clock must follow this clock.

▸ *Operation with external clock*

If an external device is to provide the clock, set that device to Clock Leader or Internal and select the corresponding input, such as BNC, ADAT, or MADI, as the clock source on the VERTOpro.

Then enable Enable Sync to External for the VERTOpro in Dante Controller. The VERTOpro Dante module will then use the externally supplied clock. The VERTOpro can therefore act as Clock Leader for the Dante network unless another Dante device is designated as Preferred Leader.

To ensure that the VERTOpro distributes the external clock to the Dante network as Clock Leader, also enable Preferred Leader for the VERTOpro.

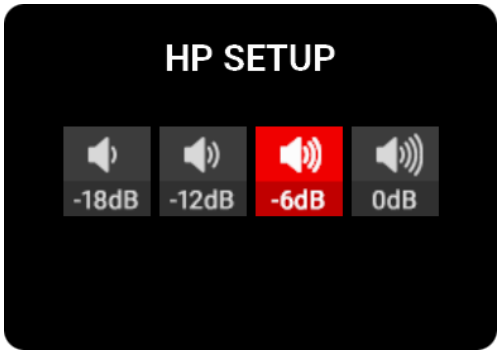
Disable Preferred Leader on all other Dante devices. The remaining devices in the Dante network will then synchronize to the VERTOpro.

Important: Enable Sync to External only if the VERTOpro is actually synchronized to a valid external clock source.

▸ *Word Clock IN and OUT*

The VERTOpro can synchronize to an external Word Clock signal via WORDCLOCK IN. Select BNC as the clock source. The current VERTOpro system clock is available at WORDCLOCK OUT for synchronizing additional devices.

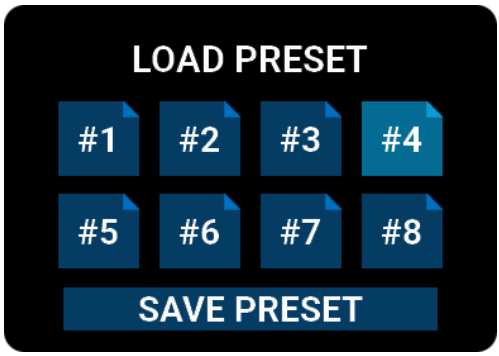
HP SETUP



Limitation of headphone gain

Use this setting to limit the maximum headphone output level and protect your hearing. Select a level appropriate for the sensitivity of your headphones. If in doubt, start with the lowest setting and increase it only if the available volume is insufficient.

PRESETS



The VERTOpro provides eight preset memory locations. Presets allow key device settings to be stored and recalled later.

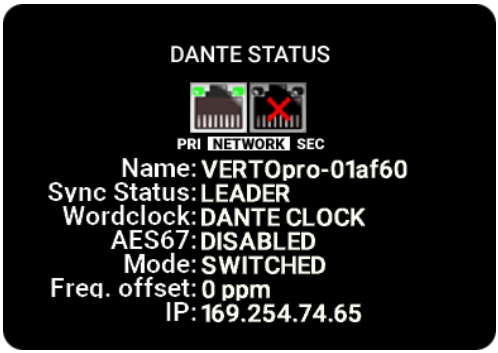
▸ *Saving a preset*

Select SAVE PRESET, then choose one of the eight memory locations. Any settings already stored in the selected location will be overwritten.

▸ *Loading a preset*

Select the desired memory location, then select LOAD.

DANTE STATUS



The VERTOpro is equipped with an Audinate Brooklyn Dante interface. Device name, sample rate, clocking, subscriptions, latency, and network mode are configured using Dante Controller.

DANTE STATUS – network and synchronization information

The DANTE STATUS view summarizes the most important information about the Dante interface:

- Name: Device name assigned in Dante Controller.
- Sync Status: Current synchronization role (Leader or Follower) in the Dante network.
- Word Clock: Displays the current Word Clock frequency.
- AES67: Indicates whether AES67 interoperability is enabled.
- Mode: Displays the operating mode of the two rear-panel Ethernet ports. In SWITCHED mode, both ports operate as a network switch. In REDUNDANT mode, the ports are used for separate primary and secondary Dante networks.
- Freq. Offset: Shows the Word Clock offset within the Dante network relative to the local Word Clock. Values within ±100 ppm are typical.
- IP: Displays the IP address of the VERTOpro on the Dante network.

The PRI and SEC symbols indicate the status of the two network connections. A green symbol indicates an active connection; a red cross indicates that the connection is missing or interrupted.

▸ *Dante network modes*

- **Switched**

In switched mode, PRI and SEC operate as two ports of the same Dante network. The second port can be used to connect a further Dante device. Avoid network loops and do not connect both ports to the same switch in parallel unless the network is explicitly configured to do so.

- **Redundant**

In Redundant mode, PRI connects to the primary Dante network and SEC to a completely separate secondary Dante network. If the primary connection fails, audio transmission continues over the secondary network.

Important: Never connect the primary and secondary Dante networks. Both networks must be routed via separate switches and separate cabling.

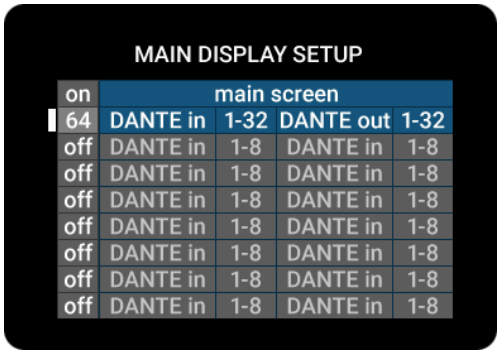
- **AES67**

AES67 enables audio transmission between Dante and compatible AES67 devices from other manufacturers. Enable and configure AES67 in Dante Controller. Note that AES67 may impose additional requirements regarding network configuration, multicast, clocking, and supported sample rates.

- **Dante channel counts**

Sample rate	Maximum Dante channel count
32–48 kHz	64 × 64 channels
64–96 kHz	32 × 32 channels
128–192 kHz	16 × 16 channels

MAIN DISPLAY



Here you can define which channel groups are shown on the Main Screen. Each row represents a configurable view of selected channel groups. Once configured, you can switch between these views on the Main Screen using the ESC key.

Configuration of the signal groups shown in the Main Screen

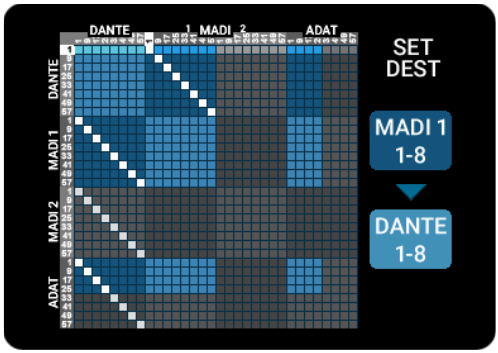
▸ *Configure views*

• Select the desired row using the rotary encoder.
• Press the MENU key to edit the selected row, then use the rotary encoder to choose how many channels are shown in that view.
• Press the MENU key to move to the next column.
• Select the input source and channel range to be displayed on the left.
• Select the output source and channel range to be displayed on the right.
• Repeat the procedure for additional rows, then press MENU to leave the view.

Available sources include Dante and, depending on the model, ADAT and the enabled MADI ports.

Note: The DISPLAY settings only change the display of the level indicators. Audio routing is not affected.

ROUTING



The routing matrix connects the VERTOpro's digital inputs to the desired outputs. Dante, MADI 1, MADI 2 and, on the VERTOpro 32 and VERTOpro 64, ADAT are available as sources and destinations.

Routing matrix with selection of source and target channel

Inputs are arranged along the top of the matrix and outputs along the left side. A highlighted intersection indicates an active connection. Each output can be assigned to one input.

Note: The selected operating mode affects the layout of the routing matrix. In Independent mode, MADI 1 and MADI 2 are displayed as separate interfaces. In Redundant mode, they are replaced by a single MADI interface.

▸ *Display of channels*

For clarity, channels are grouped into blocks of eight. The controls on the right show the currently selected source and destination blocks, for example MADI 1 1–8 or DANTE 1–8.

Note: Which blocks are available depends on the model, the sample rate and the selected MADI configuration. At higher sample rates, unavailable channels are shown in gray.

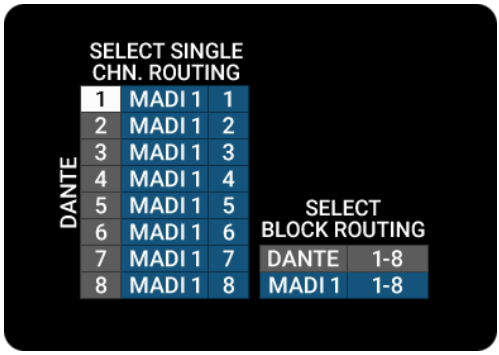
To create or change a route, first use the rotary encoder to select the output you want to configure.

Press the MENU key, then use the rotary encoder to move the white connection point and assign an input to the selected output. Press MENU again to move to the next output. Press ESC to return to the previous selection.

▸ *Switch between block and single channel routing*

In the routing matrix, inputs and outputs are first connected in blocks of eight channels each. Individual channels of an output block can then be routed differently.
First select the desired output row using the rotary encoder. Then press and hold the MENU key to open single-channel routing for that block.

▸ *Single channel routing*

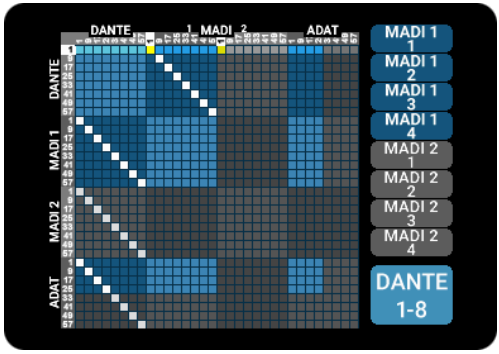


In single channel routing, each output of the selected block can be individually assigned to a source. The left column shows the eight output channels of the selected block. To the right, you can see the currently assigned interface and channel number for each output.

Single channel routing for a Dante target block

To change a connection, proceed as follows:

1. Select the desired output channel with the rotary encoder.
2. Press the MENU key to switch to select the input.
3. Select the desired interface and the desired input channel with the rotary encoder.
4. Press the MENU key again to take over the assignment and move to the next output channel.
5. Press the ESC key to return to the previous selection or routing matrix



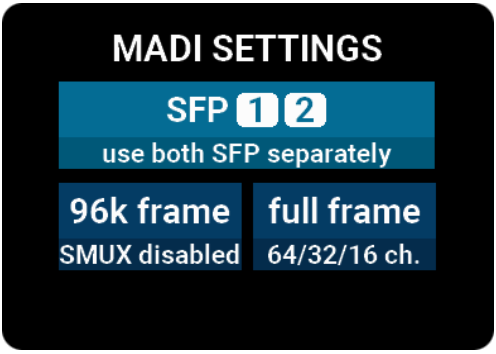
After returning to the routing matrix, the connections are again represented as 8-channel blocks. Nodes containing individual single channel routings are displayed in yellow. Thus, it can be seen directly which block connections contain deviating assignments of individual channels.

SETUP



This menu, accessible from the main menu, is intended for general settings.
The menu items are described below

MADI SETTINGS



The two MADI SFP slots can be used individually, as two independent MADI interfaces or redundantly. When used independently, signals can be routed freely between MADI 1, MADI 2, Dante and – depending on the model – ADAT. For VERTOpro 32 and VERTOpro 64, these functions are only available after the use of suitable Ferrofish-MADI SFP modules and activation of the MADI option with a MADI license.

▸ *Select SFP port*

At the top, select SFP 1, SFP 2 or both SFP ports. If "use both SFP separately" is activated, both ports work as independent MADI interfaces. Each port has its own input and output channels and can be used separately in the routing matrix.

Note: The selected operating mode affects the appearance of the routing matrix. In Independent mode, MADI 1 and MADI 2 are displayed separately. In Redundant mode, they are replaced by a single MADI interface.

▸ *96k Frame and SMUX*

For MADI signals at 88.2 or 96 kHz, you can choose between native 96k Frame mode and SMUX transmission. The setting must match the connected MADI device; mismatched settings may prevent correct channel assignment or synchronization.

▸ *MADI frame format*

FULL FRAME uses the maximum channel count supported by MADI. Depending on the sample rate, each SFP port provides 64, 32, or 16 channels. In 56-channel mode, the available channel count is reduced to 56, 28, or 14 channels respectively.

MADI SFP Status



MADI SFP STATUS: recognized MADI SFP module

▸ *SFP status*

The status view shows for each slot whether a MADI SFP module has been recognized. Compatible modules also display module type and supported transmission type. The optical MADI SFP modules supplied with the VERTOpro MX are multimode modules. VERTOpro 32 and VERTOpro 64 are supplied without a MADI SFP module.

Note: Only use MADI SFP modules suitable for MADI and approved by Ferrofish. Network SFPs are not automatically compatible with MADI.

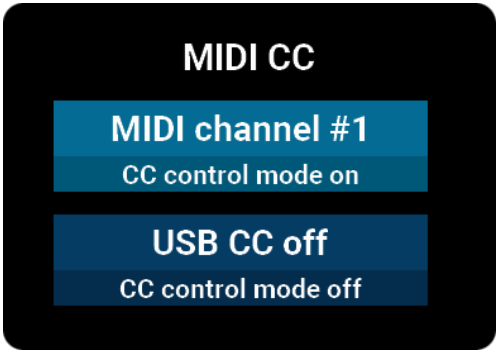
▸ *Independent operation*

In independent operation, MADI 1 and MADI 2 transmit two separate audio streams. At sample rates up to 48 kHz, up to 128 input and 128 output channels are available together. The Dante interface remains limited to a maximum of 64 × 64 channels.

▸ *Redundant operation*

In redundant operation, port 2 takes over when port 1 fails. Both paths must use the same sample rate, the same frame format and the same channel occupation. Port 2 does not provide any additional audio channels.

MIDI CC



MADI SFP STATUS: recognized MADI SFP module

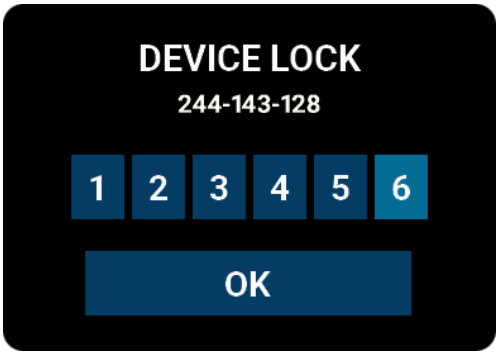
The VERTOpro can be controlled via MIDI control change commands. Activate the control separately for the physical MIDI interface (3.5 mm jack on the back) and for USB-MIDI. For both connections, a MIDI channel can be selected or the CC control can be deactivated.

An overview of the supported control change commands can be found in the MIDI Implementation Chart in the download section of the Ferrofish website.

In addition to MIDI CC commands, the device can also be remotely controlled via the RemoteFish software.

Note: USB serves only as a USB-MIDI connection. Audio transmission via USB is not supported.

DEVICE LOCK



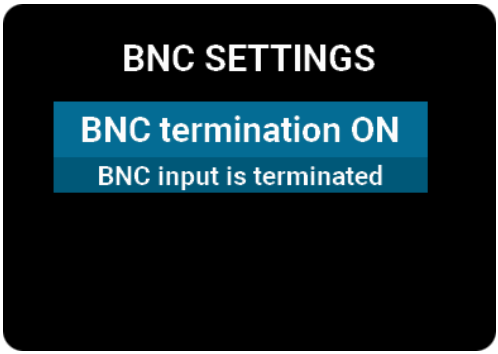
This function locks the device controls. When the lock is active, only the headphone screen remains accessible. The device is locked and unlocked using the individual code printed on the label on the underside of the unit.

Unlocking the controls using the individual device code

To enter the code, turn the rotary encoder to select a digit, then press the MENU key to move to the next position.

Important: The code cannot be changed. Keep it in a safe place, as the device cannot be locked or unlocked without it.

BNC SETTINGS

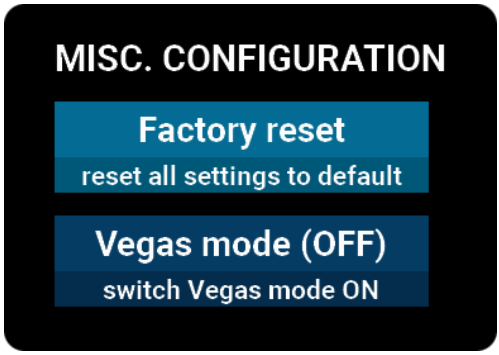


The BNC Word Clock input can be terminated internally with 75 ohms. Termination should normally be enabled when the output of another device is connected directly to WORDCLOCK IN using a BNC cable.

Termination of the Word Clock input

When several devices are connected to a single Word Clock output using BNC T-connectors, termination must be enabled only on the last device in the chain.

MISC. CONFIGURATION



Factory defaults and Vegas Mode

Here you can restore the factory settings or activate Vegas Mode.

FACTORY RESET restores the device to its factory settings.

ATTENTION: Restoring the factory settings overwrites all device settings, including all presets.

Vegas Mode displays a wave-like animation on the Main Screen level meters for demonstration purposes.

INFO



The INFO view shows the most important identification data of the VERTOpro:

- Model name
- Serial number
- Installed firmware version
- Hardware ID

The displayed model designation depends on whether the device is a VERTOpro 32, VERTOpro 64, or VERTOpro MX.

Please provide this information when contacting Ferrofish Support with a technical inquiry.

Remote Control

The VERTOpro can be remotely controlled from a Windows or macOS computer using RemoteFish. Communication is via USB MIDI or the MIDI IN/OUT sockets using a separate MIDI interface.

▸ *Connection via USB*

- Connect the VERTOpro USB-C port to the computer.
- Turn on the VERTOpro and wait until the boot process is complete.
- Start RemoteFish and select the detected VERTOpro.

The USB connection is class-compliant and provides MIDI over USB. USB audio transmission is not supported.

▸ *Connection via MIDI*

- Connect MIDI OUT of the external MIDI interface to MIDI IN on the VERTOpro, and MIDI OUT on the VERTOpro to MIDI IN on the interface.
- If necessary, use suitable adapter cables for MIDI Type A.

Many settings available on the device can also be controlled from RemoteFish. Changes are sent directly to the VERTOpro and are reflected on the device display.

Note: The current version of RemoteFish is available in the download section of the Ferrofish website.

▸ *Remote Control via MIDI Control Change*

The VERTOpro can also be controlled using MIDI Control Change (CC) messages. The MIDI Implementation Chart is available in the download section of the Ferrofish website.

Technical Specifications

The following information applies to all VERTOpro models unless otherwise specified.

GENERAL DATA	
Models	VERTOpro 32: Dante, 32 × 32 ADAT, 2 x MADI optional; VERTOpro 64: Dante, 64 × 64 ADAT, 2 x MADI optional; VERTOpro MX: Dante and 2 x MADI, no ADAT sockets
Sample rates	32 kHz; 44.1 kHz; 48 kHz; 64 kHz; 88.2 kHz; 96 kHz; 128 kHz; 176.4 kHz and 192 kHz
Routing	Internal routing matrix; Block routing in groups of eight channels and individual single-channel routing
Display	3-inch TFT color display with IPS technology; level indicator for inputs and outputs; Display of interface, synchronization and connection status
Dante I/O	64 × 64 channels at 44.1 and 48 kHz; 32 × 32 channels at 88.2 and 96 kHz; 16 × 16 channels at 176.4 and 192 kHz
Network connections	2 × RJ45 Gigabit Ethernet, PRIMARY and SECONDARY
Dante module	Audinate Brooklyn
Network modes	Switched and Redundant
AES67	Supported
Clocking	Synchronization via Dante; Transfer of an external clock into the Dante network via Enable Sync to External

ADAT	
VERTOpro 32	4 × TOSLINK optical inputs and 4 × TOSLINK optical outputs; 32 × 32 channels up to 48 kHz; 16 × 16 channels up to 96 kHz; 8 × 8 channels up to 192 kHz
VERTOpro 64	8 × TOSLINK optical inputs and 8 × TOSLINK optical outputs; 64 × 64 channels up to 48 kHz; 32 × 32 channels up to 96 kHz; 16 × 16 channels up to 192 kHz
VERTOpro MX	No ADAT connections

MADI	
MADI ports	2 slots for Ferrofish MADI SFP modules
Operating modes	Two independent MADI data streams; independent or redundant operation
64-channel mode	Per SFP: 64 × 64 channels up to 48 kHz; 32 × 32 channels up to 96 kHz; 16 × 16 channels up to 192 kHz
56-channel mode	Per SFP: 56 × 56 channels up to 48 kHz; 28 × 28 channels up to 96 kHz; 14 × 14 channels up to 192 kHz
VERTOpro MX	MADI functionality enabled at the factory; two Ferrofish multimode MADI SFP modules included
VERTOpro 32 and 64	MADI available as an optional upgrade requiring a license; MADI SFP modules not included

OPTIONAL SFP MODULES (also available separately as an accessory)	
Multimode SFP	Optical connection; Range up to 2 km
Single-mode SFP	Optical connection; Range up to 10 km
Coax SFP	Electrical coaxial; Range up to 100 m

WORDCLOCK, MIDI AND USB	
Word Clock	BNC connections for WORDCLOCK IN and WORDCLOCK OUT
Termination	75 ohm termination of the Word Clock input, switchable in the menu
MIDI I/O	3.5 mm jack sockets for MIDI IN and MIDI OUT; MIDI Type A
USB	USB-C; MIDI over USB for RemoteFish, firmware updates and MIDI control messages; No audio transmission

HEADPHONE OUTPUT	
Connection	6.3 mm stereo jack on the front panel
DAC	ESS-ES9023-DAC for the headphone listening path
Gain	Adjustable in four stages; amplifier: OPA 1688
Volume control	Digital, resolution 1 dB
Impedance range	15 to 600 ohms
Signal source	Selection of a mono channel or two adjacent channels as a stereo pair
Operation	Volume control and muting via the user interface

Power supply and mechanical data	
Power supply	12 V DC / 3 A
Connection	Lockable DC connection; center positive
Power supply	Included in the package
Protection	Internal self-resetting polyfuses
Enclosure	Rack-mountable half-19-inch enclosure, 1 RU (Rack mount kit available as an accessory)
Dimensions	220 × 135 × 44 mm (W × D × H)
Weight	About 1 kg
Operating temperature	+5 °C to +35 °C
Humidity	Less than 75 %, non-condensing

Initial Setup

Configure Clock

First determine which device in the system will act as Clock Leader. Configure all other devices as Clock Followers. In a typical Dante system, select Dante as the VERTOpro clock source and configure the connected MADI and ADAT devices as Clock Followers.

Setting up Dante

- Start Dante Controller on a computer on the same network.
- Check that the VERTOpro appears in the device list.
- Set device name, sample rate, and network mode.
- If necessary, configure Preferred Leader and Enable Sync to External.
- Create the required Dante subscriptions.

Check MADI and ADAT

In the clock and status views, check whether the connected MADI and ADAT signals are detected and synchronized. For MADI, make sure that frame format, channel mode, and 96k frame/SMUX settings match on both devices.

Configure routing

Open the routing matrix and assign the desired sources to the outputs. For larger channel groups, begin with block routing and adjust individual channels using single-channel routing if required.

Tip: Save the completed initial configuration as a preset so that it can be restored quickly.

Firmware update

Firmware updates are transferred via the USB MIDI connection using the Ferrofish UpdateTool.

▸ Performing the update

- Download the current UpdateTool and the matching VERTOpro firmware from the download section of the Ferrofish website.
- Connect the VERTOpro directly to the computer via USB-C.
- Close RemoteFish and other programs that access the MIDI connection.
- Start the UpdateTool and select the connected VERTOpro.
- Select the firmware file and start the transfer.
- Wait until the UpdateTool confirms that the update has completed successfully and the device has restarted.

Important: Do not switch off or disconnect the VERTOpro during a firmware update. Do not disconnect the USB or power connection. Interrupting the update may prevent the device from starting correctly. After restarting, check the INFO view to see if the expected firmware version is displayed.

Troubleshooting: General

The device does not start

- Check the power supply, mains outlet, and 12 V power connection.
- Check whether the lockable plug is fully inserted.
- Disconnect the device from the mains briefly, then restart it.

The VERTOpro does not appear in the Dante network

- Check the Ethernet cable, network switch, and link indicator for the port in use.
- In Switched mode, connect at least NETWORK PRI to the network.
- In redundant mode, check whether PRI and SEC are connected to separate networks.
- Make sure that the computer and device use a compatible IP address range.

No Dante audio signal

- Check the subscriptions in Dante Controller.
- Check the sample rate, Dante channel count, and VERTOpro routing.
- After changing the sample rate, wait until all devices have synchronized again.

No clock synchronization

- Use the same sample rate throughout the system.
- Use exactly one Clock Leader; all other devices must operate as Clock Followers.
- Select a valid clock source for each Clock Follower.
- Enable Sync to External in Dante Controller only if the external clock is valid.

Troubleshooting: Audio connections

Clicks, dropouts or distorted audio

- Check the clock status of all devices involved.
- Check the fiber-optic, network, and ADAT cables as well as the MADI SFP modules.
- For MADI, use the same channel mode and frame format at both ends of the connection.
- Check Dante network utilization and select a higher latency if necessary.

MADI connection is not recognized

- On the VERTOpro 32 and VERTOpro 64, check that MADI functionality has been activated.
- Check that the MADI SFP module is installed correctly and verify the fiber-optic connection direction.
- Check the sample rate, Full Frame/56-channel mode, and 96k Frame/SMUX settings.

ADAT connection is not recognized

- Check whether IN and OUT are connected correctly.
- Check the optical cable and verify that the transmitting output is active.
- Make sure that the sample rate and the S/MUX mode match.

No signal on the headphone output

- In the HP menu, select the desired source and channel.
- Check the volume, mute status, and HP gain setting.
- Use the level meter to verify that a signal is present at the selected source.

Troubleshooting: Software and Update

▸ RemoteFish does not find the device

- Use a USB data cable and connect the device directly to the computer.
- Close other programs that access the MIDI connection.
- When connecting via the MIDI jacks, check both directions: MIDI OUT to MIDI IN and vice versa.
- Start the VERTOpro and then restart RemoteFish.

▸ Firmware update interrupted

- Use a direct USB connection and a stable power supply.
- Check if the firmware file is intended for the VERTOpro.
- Quit RemoteFish and all other MIDI applications before the update.
- If the device does not start correctly, contact Ferrofish Support.

▸ Restore factory defaults

If a configuration problem cannot be identified, you can restore the factory defaults as a final troubleshooting step.

Important: When resetting to factory defaults, stored presets and custom settings are lost.

CE Conformity

EMC

This device has been tested by a qualified test laboratory and meets the standards for the approximation of the laws of the Member States on electromagnetic compatibility (EMC Directive 2014/30/EU) as well as DIN EN 55103-1 (EMC interference emission) and DIN EN 55103-2 (EMC interference immunity).

RoHS II

Each device has been soldered without lead and meets the requirements of the EU Directive 2011/65/EU and the limits for hazardous substances in electrical and electronic equipment defined therein. The documents on which this declaration is based are stored at the manufacturer and can be viewed there at any time. In the event of an unauthorized modification of this product, the validity of this CE declaration expires!

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.

Note

The present apparatus meets the limit values for Class B digital equipment as defined in Part 15 of the FCC Radio Interference Regulations. The purpose of these provisions is to provide adequate protection against disturbing interference when the device operates within a residential environment. This device generates and uses high-frequency energy and can also emit it. If it is not connected and used in accordance with the instructions given here, the device may significantly disrupt radio transmissions. However, despite following the instructions, it is possible that there will be interference with certain devices. If the device causes interference with radio or television reception, which can be checked, for example, by switching the device on and off, try to correct it by the following measures:

- Realign the receiving antenna.
- Increase the distance between device and receiver.
- Connect the device to a mains outlet on a circuit different from that than the one to which the receiver is connected.
- Contact your specialist dealer or an experienced radio and television technician for help.

Shielded cables must be used to comply with the Class B limits in Subpart B of Part 15 of the FCC Rules. Do not make changes or modifications to the device unless expressly described in this manual.

Disposal of waste equipment

According to the European WEEE Directive 2012/19/EU, electrical and electronic equipment must not be disposed of with household waste. The consumer is legally obliged to return these devices free of charge at the end of the service life at the public collection points or at the point of sale. Details of this are governed by the respective state law.
The symbol shown above on the product, packaging or in the user manual indicates this provision. If a return for recycling is not possible, the device can be returned to the manufacturer with sufficient franking:
FERROFISH GmbH, Brüderstrasse 10, 53545 Linz am Rhein, Germany.

Maintenance

There are no serviceable components inside this unit.
Clean the unit with a slightly moistened microfiber cloth.
The touchscreens can be cleaned with a microfiber cloth used for glasses. In case of heavy soiling, you can use an optician's eyeglass cleaning solution. However, avoid using damp spectacle cleaning cloths, as their chemical components can damage the coating of the lens.

Service

Repairs and modifications may only be carried out by a service workshop authorized by FERROFISH or by the manufacturer itself.
A list of certified service partners is available on request at: info@ferrofish.com. The service conditions of FERROFISH GmbH apply.

Limited Warranty

Each FERROFISH device is individually tested by us and undergoes a complete function check. FERROFISH grants a limited manufacturer's warranty of two years. The proof of purchase / receipt serves as proof of warranty. Please contact your dealer in the event of a defect, when the defect appears within the warranty period. Damage caused by improper installation or improper handling is not covered by the warranty and is subject to a charge if repaired. Claims for damages of any kind, in particular consequential damages, are excluded. Liability beyond the value of the goods of the device is also excluded. The general terms and conditions of FERROFISH GmbH apply.

State of the art

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