



NETcon 8-3 / 8-5

ArtNet DMX converter

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# 1 General information

This user manual contains important information on the safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to another user, be sure that they also receive this manual.

Our products and user manuals are subject to a process of continuous development. We therefore reserve the right to make changes without notice. Please refer to the latest version of the user manual which is ready for download under [www.thomann.de](http://www.thomann.de).

### 1.1 Further information

On our website ([www.thomann.de](http://www.thomann.de)) you will find lots of further information and details on the following points:

Download	This manual is also available as PDF file for you to download.
Keyword search	Use the search function in the electronic version to find the topics of interest for you quickly.
Online guides	Our online guides provide detailed information on technical basics and terms.
Personal consultation	For personal consultation please contact our technical hotline.
Service	If you have any problems with the device the customer service will gladly assist you.

## 1.2 Notational conventions

This manual uses the following notational conventions:

### Letterings

The letterings for connectors and controls are marked by square brackets and italics.

**Examples:** *[VOLUME]* control, *[Mono]* button.

### Displays

Texts and values displayed on the device are marked by quotation marks and italics.

**Examples:** *'24ch'*, *'OFF'*.

### Text input

Text inputs that are carried out on the device are indicated by typewriter font.

**Example:** 2323

### Instructions

The individual steps of an instruction are numbered consecutively. The result of a step is indented and highlighted by an arrow.



#### Example:

1. ▶ Switch on the device.
2. ▶ Press *[Auto]*.
  - ⇒ Automatic operation is started.
3. ▶ Switch off the device.

## 1.3 Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this manual.



Signal word	Meaning
<b>DANGER!</b>	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
<b>NOTICE!</b>	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.
Warning signs	Type of danger
	Warning – high-voltage.
	Warning – danger zone.

## 2 Safety instructions

### Intended use

This device is designed to convert DMX signals into ArtNet signals or vice versa. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

### Safety



#### **DANGER!**

#### **Danger for children**

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.



**DANGER!**

**Electric shock caused by high voltages inside**

Within the device there are areas where high voltages may be present. Never remove any covers.

There are no user-serviceable parts inside.

Do not use the device if covers, protectors or optical components are missing or damaged.



**DANGER!**

**Electric shock caused by short-circuit**

Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.



**NOTICE!**

**Risk of fire**

Do not block areas of ventilation. Do not install the device near any direct heat source. Keep the device away from naked flames.

**NOTICE!****Operating conditions**

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

Only operate the device within the ambient conditions specified in the chapter 'Technical specifications' of this user manual. Avoid heavy temperature fluctuations and do not switch the device on immediately after it was exposed to temperature fluctuations (for example after transport at low outside temperatures).

Dust and dirt inside can damage the unit. When operated in harmful ambient conditions (dust, smoke, nicotine, fog, etc.), the unit should be maintained by qualified service personnel at regular intervals to prevent overheating and other malfunction.



### **NOTICE!**

#### **Power supply**

Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user.

Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.



### **NOTICE!**

#### **Possible staining**

The plasticiser contained in the rubber feet of this product may possibly react with the coating of your parquet, linoleum, laminate or PVC floor and after some time cause permanent dark stains.

In case of doubt, do not put the rubber feet directly on the floor, but use felt-pad floor protectors or a carpet.

### 3 Features

Bidirectional ArtNet DMX converter for professional demands with the following features:

- Configuration via display on the device
- Adjustable DMX repetition rate (10 ... 40 Hz)
- 4096 channels
- Up to eight DMX universes
- LEDs to visualize the transmission status of network and DMX signal
- Supported protocols: DMX, RDM, ArtNet, sACN
- Clear OLED display (four lines each with a maximum of 16 characters)
- 2 × lockable RJ45 Ethernet port
- 8 × XLR in / output socket (female), 3-pin (item no. 464561) or 5-pin (item no. 464598)
- Power Twist in and outputs (on the back)
- 19" rack-mountable

## 4 Installation and starting up

Unpack and check carefully there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the product against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.



### **NOTICE!**

#### **Possible data transmission errors**

For error-free operation make use of dedicated DMX cables and do not use ordinary microphone cables.

Never connect the DMX input or output to audio devices such as mixers or amplifiers.



**Rack mounting**

The unit has been designed for rack mounting in a standard 19-inch rack; it occupies one rack unit.

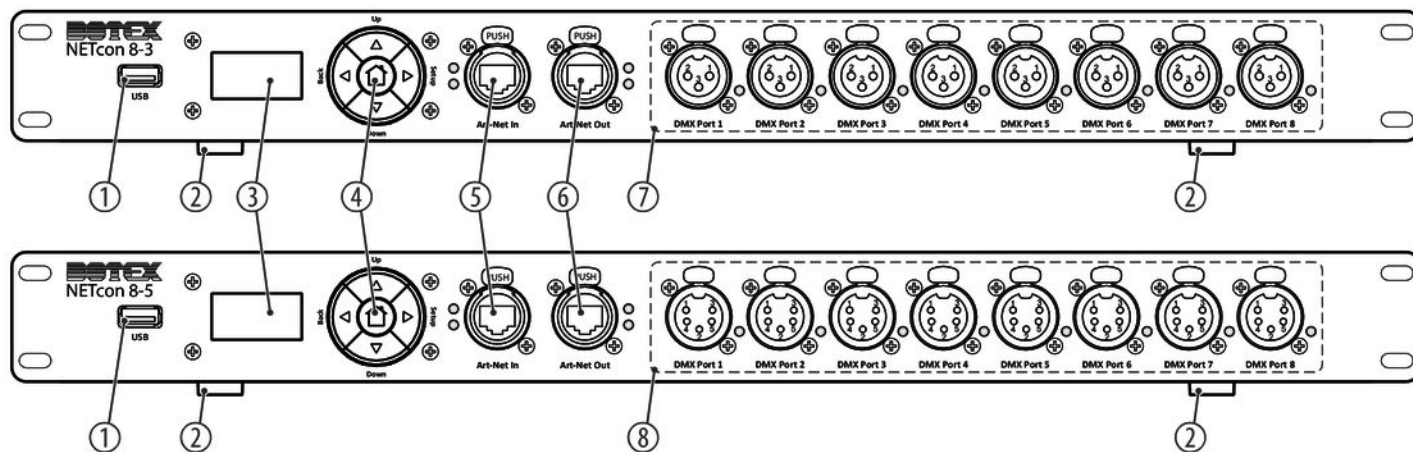
**Data connections**

The converter is connected to a computer network via one of the Ethernet interfaces or via an Ethernet switch or directly to a PC or notebook. The data is transferred to the converter and then sent internally to the XLR connectors for the DMX output. If more than eight universes are needed, the other Ethernet interface can be used to daisy chain multiple converters.

The data can also be received via the correspondingly configured DMX connections and transmitted via the Ethernet interfaces to a set IP address or via a broadcast device via ArtDMX.

## 5 Connections and controls

### Front NETcon 8-3 (464561) and NETcon 8-5 (464598)



1	<i>[USB]</i> USB interface for updates
2	Rubber feet
3	OLED display (4 lines of 16 characters each)
4	Operating key panel <i>[Up]</i> : Increases the value by one <i>[Down]</i> : Decreases the value by one <i>[Back]</i> : Menu level up <i>[Setup]</i> : Confirms the selection ⏏ : Calls up the lock screen or activates the display.
5	Network input (RJ45)
6	Network output (RJ45)
7	8 × DMX connection socket, XLR, 3-pin (item no. 464561)
8	8 × DMX connection socket, XLR, 5-pin (item no. 464598)

### Rear panel



9	Power Twist input socket
10	Power Twist output socket

## 6 Operating

### Configuring DMX interfaces

1. ➔ Press  $\uparrow$  to show the main menu. Use  $[Up]$  |  $[Down]$  to select the menu item 'Port-Config' and confirm with  $[Setup]$ . The display shows the mode of the 8 interfaces. The displayed values have the following meaning:

Display	Name	Function	
'0'	DMX output	When an interface is set to output mode, DMX data packets are sent at the set intervals. Immediately after switching on, all channel values are sent with 0. After receiving an ArtDMX packet, the channel values of the corresponding interfaces are updated.	
		'Hold'	Select 'Hold' to maintain the DMX output function, that is, the device does not receive ArtNet/sACN data, but still outputs DMX signals (default setting).
		'Off'	Select 'Off' to not maintain the DMX output, that is, the device does not receive ArtNet/sACN data and does not output DMX signals.

Display	Name	Function
'I'	DMX input	When an interface is set to input mode and DMX data is received at the interface, the data is sent immediately to the configured IP address or via the broadcast device via ArtDMX. If the 15-bit interface address matches, the other device will accept the DMX data.
'R'	RDM	In RDM mode, the interface initiates a test of the device after power up or after changing the interface mode, and incrementally checks the device every 3 seconds. When the ArtNet controller issues an ArtTodRequest instruction, the converter immediately creates a list of the UIDs of the connected devices. It supports ArtRdm when sending other RDM instructions.
'U'	Online upgrade	This is the support function of the device. Here you can update the converter yourself or the device that is in connection mode through the interface through an encrypted upgrade file provided by the ArtFirmwareMaster instruction.

2. ▶ Select 'All' if you want to set the interfaces all the same. Now select one of the four options and confirm with [Setup].

If you want to configure the interfaces differently, select individual interfaces 'Port1' ... 'Port8' to set them to one of the four values.

3. ▶ Press [Back] to go to the higher menu level.

## Interface address

The current version of the ArtNet protocol supports 15-bit addresses and allows multiple converters to be connected. There is only one Net Switch and Sub Switch of a device and the physical 8-channel interface of the device can be used as output or input accordingly. The lower 4 bits of the 15-bit address can be set accordingly. The default output address as well as the input address of 8 interfaces is '0/1/2/3/4/5/6/7'. This way, both devices – one as an 8-port input and the other as an 8-port output – can be used as an 8-channel DMX signal repeater via the network cable after setting the local IP address and destination IP address over the network connection.

If two devices are used simultaneously as an output or input, the interface address of the second device can be set to '8/9/10/11/12/13/14/15' and the Net Switch and Sub Switch of both devices can be identical. To separate the physical interfaces when using more than three devices, different Net Switches and Sub Switches must be set to have a unique 15-bit address for each interface.

If eight interface addresses of the device match, they are treated as one interface. For example, if Interface 1 and Interface 2 are set to 0x0000, the DMX data sent by the ArtNet controller to the 0x0000 interface will be simultaneously transmitted to both interfaces.

For the sACN protocol, the interface address corresponds to the universe and the value for the universe is the address of interface 1 and is then incremented with the interfaces (the universe at interface 1 is 1, the universe at interface 2 is 2, etc.). The converter sends DMX data to the appropriate interface associated with the universe in the sACN packets sent by the converter.

### Configuring ArtNet

1. ▶ Select '*ArtNet-Config*' to set up the network connections.
2. ▶ In '*Net Switch*', enter a value between '0' and '127' for the upper 7 bits of the 15-bit address in the ArtDMX.
3. ▶ In '*Sub Switch*', enter a value between '0' and '15' for the middle 4 bits of the 15-bit address in the ArtDMX.
4. ▶ In '*SwOut*', enter a value between '0' and '15' for the lower 4 bits of the 15-bit address of the output in the ArtDMX.
5. ▶ In '*SwIn*', enter a value between '0' and '15' for the lower 4 bits of the 15-bit address of the input in the ArtDMX.




## Configuring sACN

1. ➤ Select '*sACN-Config*' to set the domain area for the sACN protocol.
2. ➤ In '*Universe*', choose a value between '*00001*' ... '*63999*'.

## Settings

1. ➤ Select '*Settings*' to make general settings.
2. ➤ In '*Sub-Mask*', select one of the three address ranges.
3. ➤ In '*Local IP*', enter the desired local IP address of the device.
4. ➤ In '*Broadcast*', in Input mode, select the option '*Broadcast*' or '*Unicast*'.
5. ➤ In '*Target IP*' under '*All*', enter an IP destination address uniformly for all 8 interfaces, or under '*IP1*' ... '*IP8*', enter a separate IP destination address for each interface. The first byte of the IP address is not displayed. The '*Target IP*' is relevant when the device should receive DMX signals and transform them into ArtNet or sACN signals and output them.
6. ➤ In '*Input-Switch*', you can select the protocol with which you want to receive the data at the serial interface ('*ArtNet*' or '*sACN*').
7. ➤ To set the backlight in '*Backlight*', select the value '*Disable*' (no backlight) or a value of '*1 Min*' ... '*60 Min*' (duration of illumination). If no action is taken on the device within the set time, the backlight turns off.

8. ▶ Turn keylock on and off in *'KeyLock'*.  
Press  for 3 seconds if you want to activate the display while the keylock is activated.
9. ▶ For the DMX intervals in output mode, select a value of *'25' ... '100'* (unit ms) in *'DMX-Interval'*.
10. ▶ In *'Factory'*, you can reset the device to factory default settings.

### Display of the settings

1. ▶ *'Version'* displays the current software version.
2. ▶ *'Devices'* shows how many RDM devices are connected to the respective interface (display shows *'Port1:0' ... 'Port8:0'*).

### Lock screen

The lock screen displays:

1. ▶ In the first line: the local IP address of the device
2. ▶ In the second line: Value of the ArtNet universe (calculated from Net Switch, Sub Switch, and Interface 1 value)
3. ▶ In the third line: Value of the sACN universe

4. ▶ In the third line: Keylock and software version

## Changing the MAC address

The network device has a unique MAC address (48 bits, 6 bytes), with the front 24 bits being the registered manufacturer identifier and the back 24 bits being a proprietary assignment by the manufacturer. The first two bytes of the MAC address are factory set to 0xE0FE and the last four bytes are calculated by the MCU's UID to prevent duplication. Do not change the MAC address without absolute necessity!

If you need to resolve a MAC conflict by changing the MAC address, follow these steps:

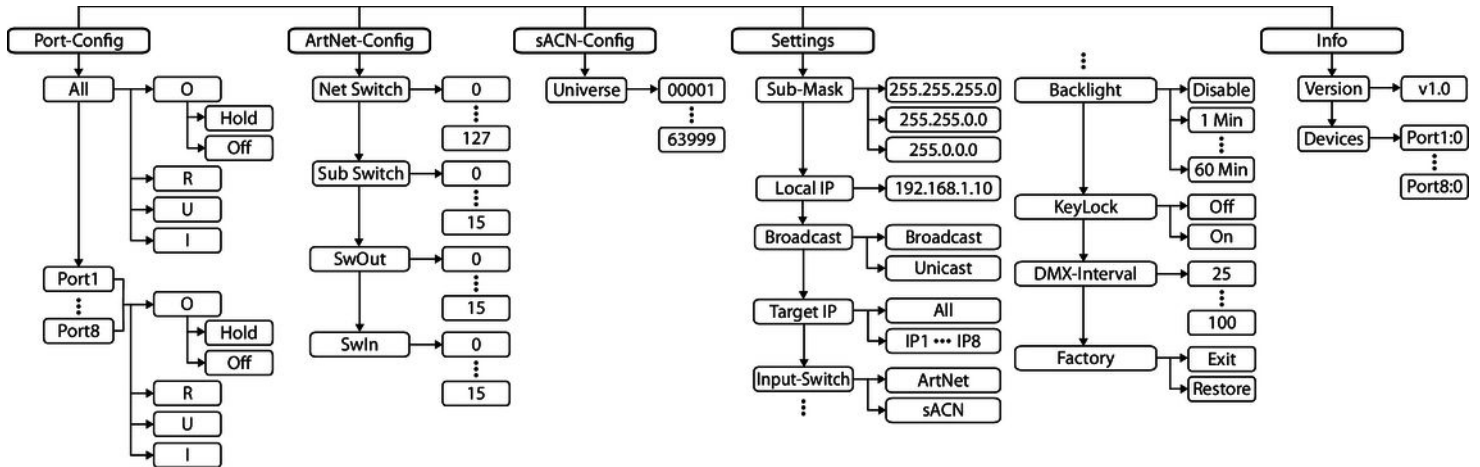
1. ▶ In the 'Info' menu, call up the submenu 'Version', press [Down] twice and then [Setup] to open the password menu.
2. ▶ Change the password with [Up] | [Down] to '254' and press [Setup] to open the menu for changing the MAC address.
3. ▶ Change 6 consecutive bytes, press [Setup] to change the next one, save all changes and go with [Back] back to the main menu.

## ArtCommands

The device can also be controlled using ArtCommands. For the possible commands and their functions refer to the following table.

<b>ArtCommand format</b>	<b>Functions</b>
Command=Restart	Restarts the device
Command=Search RDM	Find a port for a new RDM device
Command=Clear RDM List	Clears the UID list of the RDM devices for each port
Command=Clear RDM List Command=Search RDM	Refind the RDM device for each port
Command=Research RDM1	Refind the RDM device on port 1
Command=Research RDM2	Refind the RDM device on port 2
Command=Research RDM3	Refind the RDM device on port 3
Command=Research RDM4	Refind the RDM device on port 4
Command=Research RDM5	Refind the RDM device on port 5
Command=Research RDM6	Refind the RDM device on port 6
Command=Research RDM7	Refind the RDM device on port 7
Command=Research RDM8	Refind the RDM device on port 8

## 6.1 Menu overview



## 7 Technical specifications

		<b>ArtNet DMX converter NETcon 8-3 (464561)</b>	<b>ArtNet DMX converter NETcon 8-5 (464598)</b>
In and output connectors	DMX control	8 × XLR chassis socket, 3-pin	8 × XLR chassis socket, 5-pin
	Network	1 × Ethernet RJ45, lockable	
	Voltage supply	1 × Power Twist input socket	
Output connections	USB	1 × USB port, 5 V, 1 A	
	Network	1 × Ethernet RJ45, lockable	
	Voltage supply	1 × Power Twist output socket	
Control protocols		DMX512, RDM, ArtNet, sACN	
Power consumption		7.5 W	
Operating supply voltage		AC 90 ... 250 V ~ 50/60 Hz	
Mounting properties		19 inch, 1 RU	

		<b>ArtNet DMX converter NETcon 8-3 (464561)</b>	<b>ArtNet DMX converter NETcon 8-5 (464598)</b>
Protection class		IP20	
Dimensions (W × H × D)		463 mm × 49 mm × 169 mm	
Weight		2.0 kg	
Ambient conditions	Temperature range	0 °C...40 °C	
	Relative humidity	50 %, non-condensing	

### Further information

19" rack-mountable	Yes
Internal memory	No
RDM compatible	Yes
Housing	Metal
Colour	black

## 8 Plug and connection assignment

### Introduction

This chapter will help you select the right cables and plugs to connect your valuable equipment so that a perfect light experience is guaranteed.

Please take our tips, because especially in 'Sound & Light' caution is indicated: Even if a plug fits into a socket, the result of an incorrect connection may be a destroyed DMX controller, a short circuit or 'just' a not working light show!

### DMX connections

The unit offers a 3-pin XLR socket for DMX output and a 3-pin XLR plug for DMX input. Please refer to the drawing and table below for the pin assignment of a suitable XLR plug.



Pin	Configuration
1	Ground, shielding
2	Signal inverted (DMX-, 'cold signal')
3	Signal (DMX+, 'hot signal')



**DMX connections**



A five-pin XLR socket serves as DMX output, a five-pin XLR plug serves as DMX input. The drawing below and the table show the pin assignment of a matching coupling.

Pin	Assignment
1	Ground (shielding)
2	Signal inverted (DMX-, 'cold')
3	Signal (DMX+, 'hot')
4	unused / second connection (DMX-)
5	unused / second connection (DMX+)

## 9 Protecting the environment

### Disposal of the packaging material



For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

### Disposal of your old device



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.



