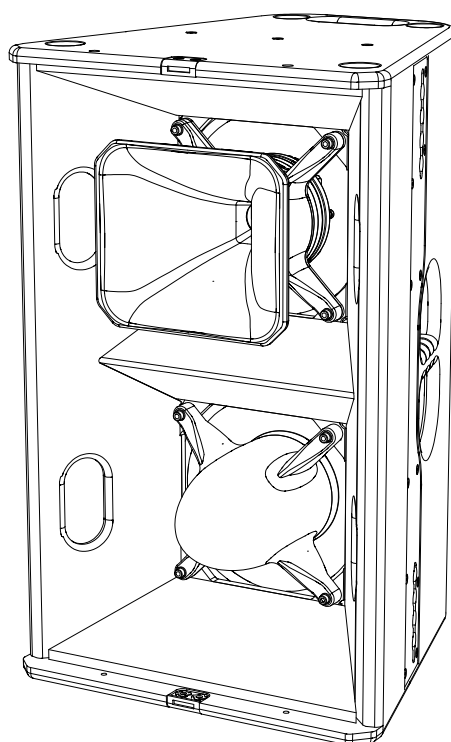


T24N

Operation manual



Introduction

Thank you for choosing a high-quality product “MADE IN GERMANY” from the brand TWAUDIÖ.

An innovative modern classic, the T24N delivers remarkable lows and low-mids, dynamic highs and pristine intelligibility, all in a compact cabinet that can be pole-mounted or flown as required.

It's no wonder that Germany's respected Production Partner magazine described it as representing „perfect loudspeaker construction at all levels“.

The story of the T24N goes back to the beginning of TWAUDIÖ itself and the original T24 - the first TWAUDIÖ loudspeaker. Widely considered a benchmark product in the live sound market and beyond, the T24 was compact yet strikingly powerful with an innovative 2x 12" / 1.4" horn-in-horn construction, enabling outstanding dynamic range and a maximum sound pressure level of 143 dB with a front panel measuring just 70 x 40 cm (27.6 x 15.7 in).

After a highly successful decade, the T24 underwent a substantial upgrade, becoming the lighter T24N. The T24N is fitted with custom 12" neodymium woofers which work in tandem with the upgraded enclosure construction to achieve full range capability from 65 to 18,000 Hz. A newly designed 1.4" mid-high tweeter with a 3" titanium membrane reproduces precise, silky highs that reduce distortions to a minimum - even at the highest levels. The standard 60 x 40 degree horn can be quickly and easily exchanged for a 90 x 50 degree alternative (both also rotatable), without the use of tools.

Additionally, the bi-amp / passive switch gives you the choice between an uncompromising two-way active mode or an efficient passive mode.

Most importantly, the T24N is truly multi-functional, ensuring excellent audio quality for both speech or music in every environment. It can be deployed either as a single enclosure, in a pole mounted configuration, or flown from a rig where multiple boxes can be hung or clustered as required up to 360 degrees for presentations in the round. All of this functionality is housed in an enclosure weighing just 33 kg (73 lbs).

If you lend your product to another party, inform that party of the safety-related operating procedures and hand over this assembly guide. If you require additional copies of this manual, you can obtain them free of charge from TWAUDIÖ or download them from www.twaudio.de

Instructions in this user manual

Strictly adhere to the instructions contained in this operating manual that are marked as follows:



This symbol in combination with the signal word “Warning” identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to serious injury or even death.



This symbol in combination with the signal word “Warning” identifies a potentially hazardous situation for persons with a pacemaker. Failure to comply with this safety instruction can lead to serious injury or even death.



This symbol in combination with the signal word “Caution” identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to light or moderate injury.



This symbol in combination with the signal word “Note” identifies a potentially hazardous situation. Failure to comply with this safety instruction can lead to product damage.



This symbol in combination with the signal word “Tip” identifies additional information or notes that will simplify working with TWAUDIO products on the basis of practical experience.

**Read manual
before use!**

Notes on the products

Before using the device, carefully read the operating manual and keep it with the T24N loudspeaker.

General information

Operation manual: OM-T24N
Version 2.0 en, 12/2021
© by TWAMBO 2021; all rights reserved.

All information contained in this operating manual was correct to the best of our knowledge at the time of printing.

Quality warranties or assurance of suitability for a certain type of use based on the technical specifications, dimensions and weights are not granted by TWAMBO.

TWAMBO also shall not assume liability for any secondary damage (property damage and/or personal injury) nor for the failure to comply with this operating manual!

TWAMBO reserves the right to update this document based on recent developments.

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1. Safety | Intended use

Please adhere to the following safety instructions to avoid risks when operating loudspeakers.

The T24N loudspeaker was developed for use in professional sound systems. The loudspeaker may only be used by trained and qualified personnel.

Note the operating modes described in this operating manual. Other uses are not permissible.

Damage caused by improper use is not covered by TWAMBO.



WARNING

Loudspeakers generate an electromagnetic field. Persons with pacemakers are not permitted to remain in the immediate vicinity of loudspeakers as the electromagnetic fields can cause pacemakers to malfunction.



WARNING

When working with heavy loads exceeding 20 kg (44 lbs.), use suitable aids (dollies, hoisting slings, etc.). Multiple persons may be required depending on the situation.

Ensure that the units are in a stable position and are firmly attached. A falling loudspeaker can result in serious personal injury and property damage.

When using and assembling TWAUDIÖ loudspeakers, only use materials specified by TWAUDIÖ. These tasks must be performed by qualified personnel. Adhere to the applicable safety regulations.



NOTE

When setting up loudspeakers, ensure that they are not exposed to the following ambient conditions:

- Direct sunlight
- Humidity
- Jolting
- Dust



WARNING

Keep away from the immediate vicinity of loudspeakers that are operated at high sound pressure levels. These loudspeaker systems are capable of endangering your health. Sound levels beginning as low as approximately 90 dB SPL can lead to long-term hearing impairment.



NOTE

Avoid:

- Feedback
- Distorted signals (clipping) and
- Peaks resulting from switching on devices, plugging in devices or unplugging devices during operation.

Such signals can lead to loudspeaker overload and ultimately to loudspeaker failure.



Ensure that the loudspeaker is not exposed to permanent thermal overloads. Thermal overloads may cause a fire and result in serious personal injury and property damage.

Note that TWAMBO does not provide a warranty for damage that can be attributed to this type of overload and therefore cannot be held liable for any secondary damage.



A permanent magnetic field is present in the immediate vicinity of loudspeakers. Ensure that objects which react sensitively to magnetic fields are not located in the immediate vicinity of the loudspeaker. In particular, this applies to magnetic storage media, magnetic stripe cards such as debit cards and CRT displays. A distance of approximately one meter is sufficient to avoid damage.



Check loudspeakers and accessory parts regularly for visible wear. This is essential to ensure continuing fault-free operation. Worn parts should be replaced immediately. Spare parts are available from TWAUDIÖ.

2. Overview

2.1 Components

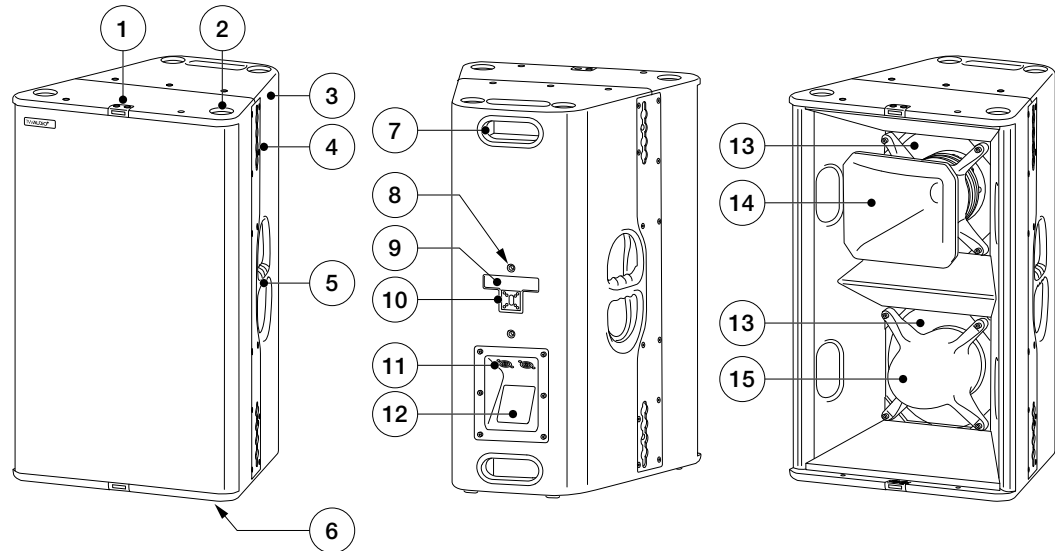


Figure 2.1 - Overview

1. Dolly latch base to attach the TWAUDIO T24N front dolly
2. Milling for rubberfeet for safely stacking loudspeakers
3. 15 mm multiplex housing – Warnex texture paint surface finish
4. Rigging plate for attaching accessory parts
5. Ergonomic carrying handles (left and right)
6. Rubber feet (4 pieces)
7. Handles (top and bottom)
8. M10 threaded insert for attaching accessory parts
9. Warning label
10. Switch for operating mode (passive, biamp)
11. Standard connection panel with two speakON® connectors
12. Type label
13. 12" cone drivers
14. Interchangeable horn with 1.4" compression driver
15. Phase plug

2.2 Variants

The T24N loudspeaker is available in a 60° x 40° variant and in a 90° x 50° variant. The specified degree values refer to the horizontal and vertical radiation characteristics of the horn. Different interchangeable horn cones can be installed for this purpose. The variant of the T24N loudspeaker can be identified on the outside of the horn cone (see figure 2.2.1).

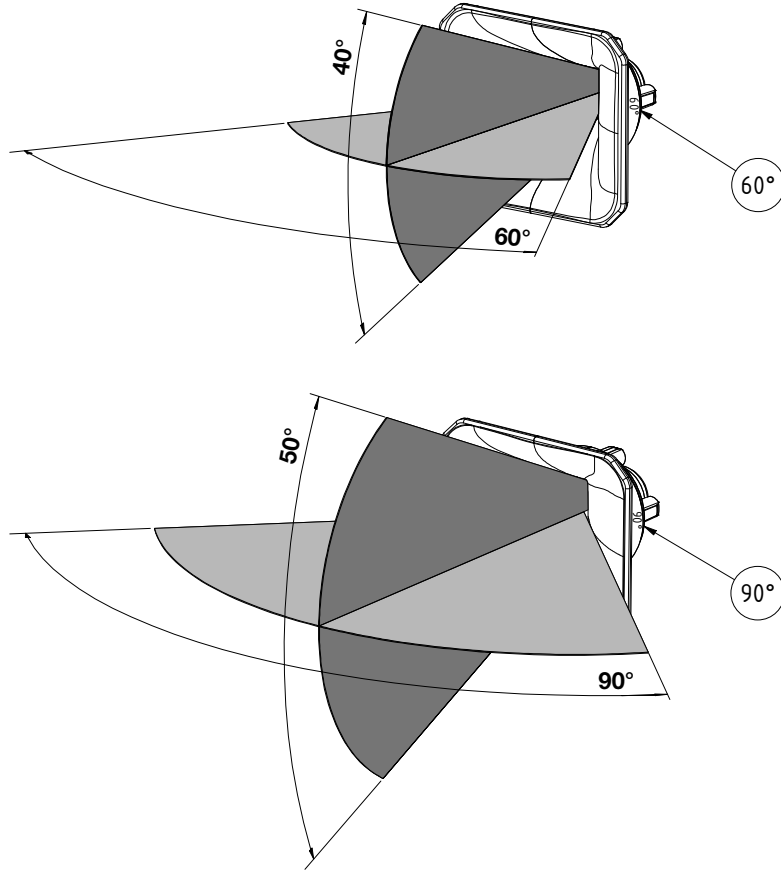


Figure 2.2.1 - Variants of the T24N horn cone



The modular design of the high frequency unit allows a quick change between the different characteristics of dispersion.

The entire high frequency unit consists of the horn cone (1), the horn base (2), the driver plate (3) and the compression driver (4).

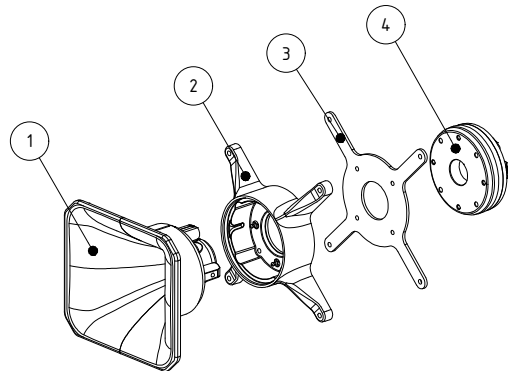


Figure 2.2.2 - High frequency unit

2.3 Operating modes

The T24N loudspeaker has a switch (see figure 2.3) on the back for switching between two different operating modes (see figure 2.1, no. 10).

In the „PASSIVE“ mode, the loudspeaker is operated on a passive audio crossover with a single amplifier channel.

In the „BIAMP“ mode, the internal passive crossover is being by-passed, therefore the low-frequency section (2×12“) and high-frequency (1×1,4“) section must be driven separately by individual processed amplifier channels.

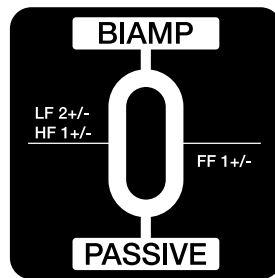


Figure 2.3 - selector switch



NOTE

Never change the operating mode while the loudspeaker is connected. In addition to setting the switch, the corresponding preset on the amplifier must be changed.

Operating with an incorrect preset can damage parts of the loudspeaker.

3. Technical specifications

3.1 Data sheet

	Operating mode	
	Biamp	Passive
Drivers	2x 12" LF / 1x 1,4" HF	
Frequency response	65 - 18000Hz	
Power handling (program/Peak)	1400 / 2800W LF 220 / 440W HF	1400 / 2800W
Impedance	4 Ω LF 8 Ω HF	4 Ω
Coverage angles (h x v)	60° x 40° or 90° x 50°	
Max. SPL / 1m	143dB	
Dimensions (h x w x d)	706 x 440 x 440mm [27,8 x 17,3 x 17,3in]	
Weight	33,1 kg [73 lbs]	
Surface	Warnex textured paint	

3.2 Connection diagram

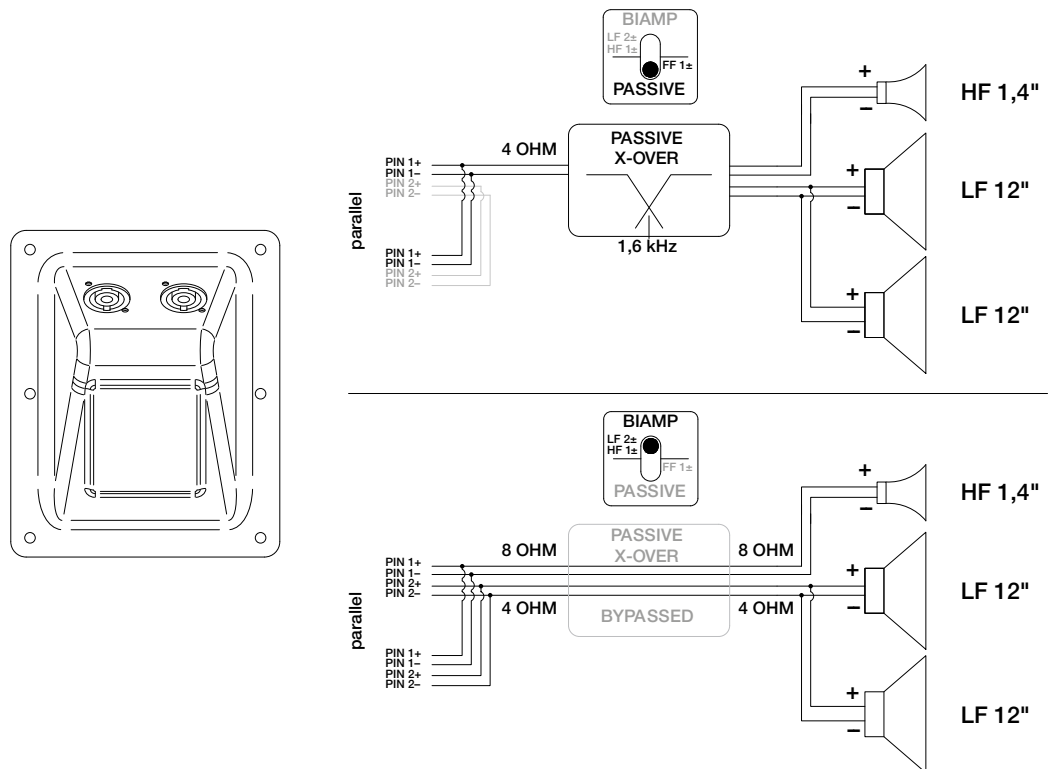


Figure 3.2 - Connection diagram

4. Commissioning

4.1 Setup

The T24N loudspeaker is designed for standing or hanging, vertical operation. TWAUDIÖ provides a wide range of accessories to securely attach the loudspeaker.



Make sure that all system structures are located on a firm, level surface and that the surface can bear the total weight!



Make sure the speakers are securely fastened to prevent personal injury and property damage. Secure stacked loudspeakers properly so that they can be tipped by 10° in any direction without toppling.



TWAUDIÖ recommends using only the accessories specified by TWAUDIÖ for securing and mounting loudspeakers.



Please note that when operating the T24N loudspeaker without front grill, the HF horn must additionally be secured against falling out! (Sticking)

4.2 Rotating and changing the HF horn

By default, the HF horn of the T24N loudspeaker is oriented so that the horizontal beam angle is 60° and the vertical beam angle is 40°. In some situations it may be advantageous to change the emission characteristics in the HF range. You can replace the standard high frequency horn of the T24N loudspeaker with an optional 90° x 50° version. Proceed as follows:

4.2.1 Rotating the HF horn

1. Place the T24N loudspeaker on its back, with the speaker grill facing up. Make sure to place the speaker on a clean, non-slippery surface.
2. To remove the front grill, a hexalobular key with the size of TX25 is required. Remove all front grill mounting screws from the top and the bottom of the loudspeaker (4 pieces). Lift the front grill of the loudspeaker away. Secure the speaker against lifting and slipping if necessary with a second person.
3. Pull the horn with the compression driver up and out of the speaker cabinet.
4. Turn the horn funnel 90°.
5. Insert the twisted horn funnel into the horn foot. To do this, press the horn funnel until it snaps back into the horn foot with the click mechanism. Then check the tightness of the horn funnel in the horn foot.
6. Attach the grill using the screws provided.



Please note that when operating the T24N loudspeaker without front grill, the HF horn must additionally be secured against falling out! (Sticking)

4.2.2 Changing the HF horn

1. Place the T24N loudspeaker on its back, with the speaker grill facing up. Make sure to place the speaker on a clean, non-slippery surface.
2. To remove the front grill, a hexalobular key with the size of TX25 is required. Remove all front grill mounting screws from the top and bottom of the loudspeaker (4 pieces). Lift the front grill of the loudspeaker away. Secure the speaker against lifting and slipping if necessary with a second person.
3. Pull the horn with the compression driver up and out of the speaker cabinet.
4. Insert the horn funnel to be changed into the horn foot. To do this, press the horn funnel until it snaps back into the horn foot with the click mechanism. Then check the tightness of the horn funnel in the horn foot.
5. Attach the grill using the screws provided.



WARNING

Please note that when operating the T24N loudspeaker without front grill, the HF horn must additionally be secured against falling out! (Sticking)

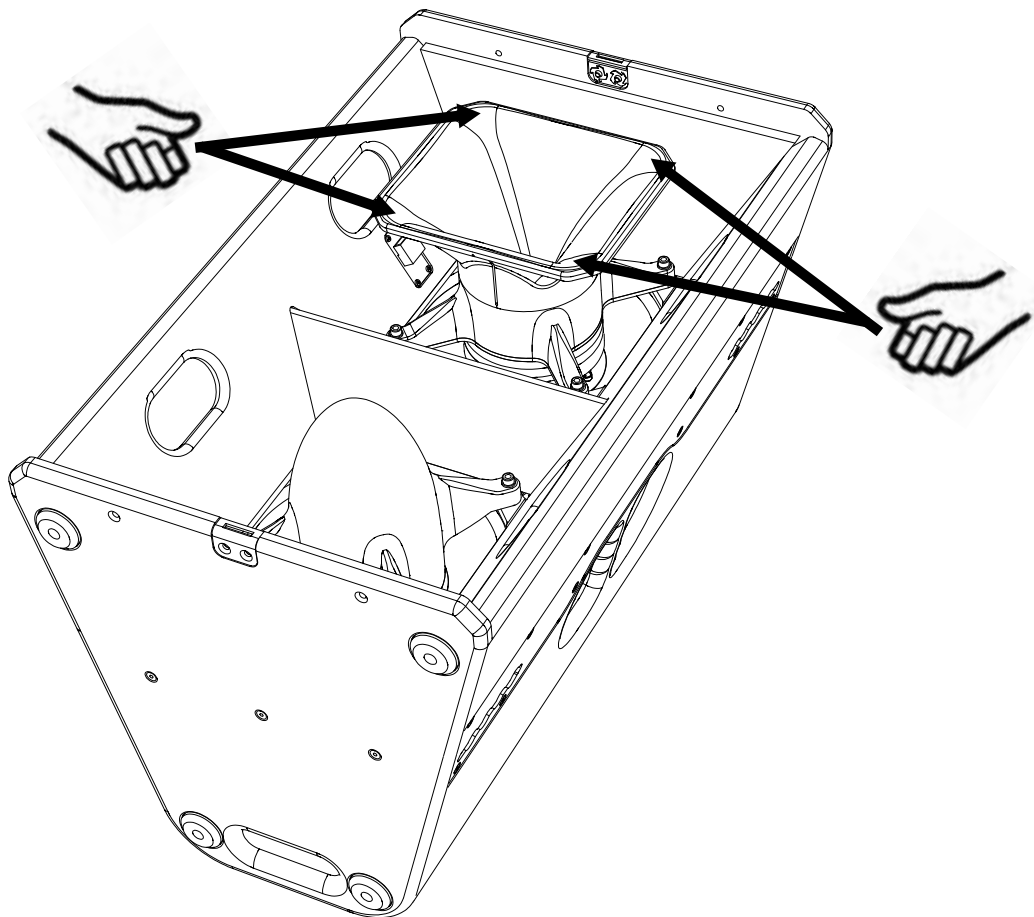


Figure 4.2.2 - changing the HF horn

4.3 Operation

Operation of the T24N loudspeaker requires a DSP-Controller. For this purpose, only presets developed by TWAUDIÖ are recommended. The TWAUDIÖ system racks are ideally suited for this purpose.



NOTE

Before connecting the loudspeaker to the amplifier, ensure that the right preset has been loaded.

Using a wrong, out dated or a preset not provided by TWAUDIÖ can lead to destruction of the speaker.



NOTE

Make sure that the amplifier's specifications meet the requirements. Using an amplifier that doesn't meet the specifications can destroy the loudspeaker.

Please note the technical data in section 3.1 on page 10.

4.5 Connecting the cable

To create a cable connection with an amplifier rack from TWAUDIÖ, proceed as follows.



NOTE

Ensure that the cable cross sectional area is sufficient (at least 1.5 mm²) to avoid power losses. TWAUDIÖ recommends using the loudspeaker cables available from TWAUDIÖ.

When connecting the cables to the loudspeaker, ensure that polarity (+/-) and pin assignment (1/2) are correct. Incorrect connection can lead to a significant change in the loudspeaker's sound characteristics and may damage the driver.

The pin connections of the T24N loudspeaker can be found in section 3.2 ("Connection diagram") on page 10.

The internal wiring of the T24N loudspeaker allows for parallel connection of multiple loudspeaker units.

Please note that parallel connections will decrease the total impedance of your loudspeaker configuration.

The total impedance and the resulting power of the speaker configuration must match the output power of the amplifier.

5. Transport and Storage

Due to the T24N loudspeaker weighing over 20kg [44lbs.], two persons are required to handle and transport the unit.



NOTE

The FDB30 front dolly and the CaseT24 can be used to transport the T24N loudspeaker by a single person.

When transporting and storing the unit, it is important to ensure that the surface and front grill of the loudspeaker are not damaged. Moisture can penetrate through exposed wood surfaces and cause the wood to swell. A bent or broken front grill will no longer adequately protect the sensitive speaker membranes.

In addition, appreciable dust deposits may considerably impair the functionality of a loudspeaker membrane. For this reason, the loudspeakers should be transported and stored in a safe, careful, dry and largely dust-free manner.

The following accessory parts for transport and storage are available from TWAUDIO:

- CaseT24 (flightcase for two T24N)
- CoverT24 (protective cover)
- FDB30 (front dolly)

The original packaging is unsuitable as permanent storage and transport packaging.

6. CE Conformity Declaration

Copy and translation of the original CE Conformity Declaration:



We hereby declare that the below-referenced components by virtue of their design and construction, and in the configuration placed on the market by us, satisfy the safety and health requirements of the applicable EC directives. This declaration becomes invalid in case of modifications that have not been approved by us.

This declaration applies to the following components

- T24N-60
- T24N-90

as well as all model variants based on these, provided that they correspond to the original factory models and have not been technically modified in any way.

Applicable directives:

- 2001/95/EG
- 2011/65/EU

Applicable national standards and technical specifications:

- DIN EN 18800
- DIN EN ISO 12100
- DGUV Vorschrift 17 und 18
- EN 50581: 2013-02

Berlin, Germany, January 1st, 2021

A handwritten signature in black ink, appearing to read 'Wüstner'.

Bernhard Wüstner

7. Disposal

It is prohibited to dispose of used electrical equipment with household refuse.



All TWAMBO GmbH products are so-called B2B-products. This means that they are sold by a commercial business to a commercial business. TWAMBO products that bear the trash can symbol shown here may only be disposed of by TWAMBO.

The loudspeaker owner is legally responsible for proper disposal of used devices that do not bear this symbol. This pertains to all products delivered prior to March 29, 2010. Nevertheless, TWAMBO will also be happy to assist you in this case.

If you have any question regarding the disposal of used devices, please contact us under the following telephone number:

+49 (0) 71 41 - 48 89 89 0

Thus, TWAMBO is in strict compliance with the Waste Electrical and Electronic Equipment Directive (2012/19/EU) for the protection of our environment.

TWAMBO is registered under the following WEEE-reg.-no. with the German National Register EAR as a B2B-manufacturer and distributor of electrical devices:

DE93295191

In countries outside of the European Union, comply with local regulations.

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