Studio 8c.

Owner's manual
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DUTCH & DUTCH

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Important safety information

Read this manual before first use and retain it for future reference

Follow all safety instructions

- ### Electrical safety

  This is a Class I appliance which requires a protective earth connection. Always ensure that the device is properly grounded.

  Take care to route the power cord in such a manner that it is unlikely to be pinched, walked on, or stressed in any other way. If the power cord is damaged, replace it with an equivalent type.

  Unplug the power cord during a thunderstorm or when the product is left unused for a long time.

- ### Moisture

  Do not use this product in moist or wet conditions. Make sure that no liquids can be spilled or splashed on the product. Do not place objects containing liquids on the product. If liquid should spill into the product, do not use it anymore. Unplug the power cord and have the product serviced by a qualified technician.

- ### Heat and ventilation

  This product contains components that can get warm and require proper ventilation in order to function properly. Do not block any of the ventilation openings on the back panel.

  Additionally, make sure not to use the product in the direct vicinity of a heat source.

- ### Sound pressure

  Professional audio equipment is capable of producing sound pressure levels that can cause hearing impairment. Local laws regarding exposure to such sound pressure levels should be observed and hearing protection should be used if necessary.

- ### Rigging and mounting precautions

  When mounting or installing loudspeakers, use accessories that have been approved by Dutch & Dutch. This is the only way that safe operation is guaranteed. Furthermore, make sure that all load–bearing components and structures have suitable load limits, taking legally applicable safety factors into account.

  When either mounting accessories or rigging points on the loudspeaker cabinet have visible damage such as cracks, corrosion, bending or warping, damaged screw threads and so forth, the affected device should be taken out of service immediately. Safe operation can not be guaranteed when any damage is present. Perform a thorough visual inspection before use to ensure that this is not the case.

- ### Cleaning

  Use only a dry or damp cloth to clean the product.

- ### Maintenance and service

  This product may only be serviced by a qualified technician. Any attempt at servicing or disassembling the product beyond the measures explicitly mentioned in this manual will void the manufacturer's warranty.

IF YOU HAVE A QUESTION ABOUT THE TECHNOLOGY, DESIGN, SPECIFICATIONS, OPERATION, ACCESSORIES OR APPLICATIONS OF YOUR DUTCH & DUTCH PRODUCT, DO NOT HESITATE TO CONTACT US AT SUPPORT@DUTCHDUTCH.COM

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Contents

Important safety information 3

Contents 5

General information 6

- Introduction 6
- Quality assurance & control 6
- Contents of the box 6
- Accessories 6

Product configuration 7

- Tweeter and waveguide 7
- Midwoofer and passive cardioid cabinet 7
- Cabinet construction 7
- Subwoofers and sealed cabinet 7
- Crossover and electronics 7

Front panel overview 8

Rear panel overview 9

Product operation 10

- Connecting to mains power 10
- Status LED 10
- Connecting to a local area network 10
- Audio input 10
- Outputs 10
- Settings pushbutton 10
- Cooling fan 11
- Fuse 11

Sound optimization 12

- Basic triangle 12
- Listening distance 12
- Listening height 12
- Toe-in 12
- Boundary coupling 13

Limited warranty 15

- Coverage 15
- Handling 15

General information

Introduction

Congratulations on your purchase of the Dutch & Dutch Studio 8c. The Dutch & Dutch Studio Series combines cutting edge acoustical engineering with unique Clerk™ communications and signal processing, packaged in a durable product.

The Dutch & Dutch Studio 8c is a powerful studio monitor for listening distances from 0.5 metre upwards. Its advanced electronics and software provide many filtering, system integration, and equalization options.

This manual contains information on how to handle, install, use and maintain the product, as well as important safety instructions.

Quality assurance & control

Every Dutch & Dutch product is thoroughly inspected and tested before shipping, as certified by the QC note you will find enclosed with the product. If any sign of damage or malfuction is present upon arrival of the product, please do not throw away any of the packaging material and immediately contact your Dutch & Dutch sales representative.

Contents of the box

The box should contain:

- 1 Dutch & Dutch Studio 8c loudspeaker;
- 1 IEC power cord matching your regional power outlets;
- 1 QC note;
- 1 manual (such as this one)

If any of these items is missing, please contact your Dutch & Dutch representative.

Accessories

Several accessories are available for the 8c. Even if your application requires special accessories, Dutch & Dutch may be able to provide them or consult you on alternative solutions. See dutchdutch.com or contact your Dutch & Dutch representative for more information.

Product configuration

Tweeter and waveguide

A ferrofluid–enhanced 1" aluminium-magnesium alloy dome tweeter is coupled to an 8" constant directivity waveguide. Thanks to extensive optimization of the waveguide, baffle dimensions and baffle edge roundovers, its frequency response is virtually flat, both on and off axis. The stiff and light membrane is resonance-free throughout the audible range.

Midwoofer and passive cardioid cabinet

The 8" woofer has a light, stiff woven polypropylene cone. Its high internal damping and advanced surround design suppress resonances in the woofer's operating range. The long voice coil is wound on an aluminium former, providing high power handling and low thermal compression.

The passive cardioid cabinet weakens rearward radiation by over 15 dB, resulting in low reverberation and very flat power response.

Cabinet construction

The exterior panels of the cabinet are made of 19 mm thick solid oak wood, whereas the internal construction is made of 18 mm birch plywood. In combination with rabbeted joints and extensive bracing, this results in a strong, rigid construction.

The outer baffle is made of spray painted ABS and damped with a special sound deadening compound to avoid resonances. It is invisibly affixed with six threaded steel rods.

Subwoofers and sealed cabinet

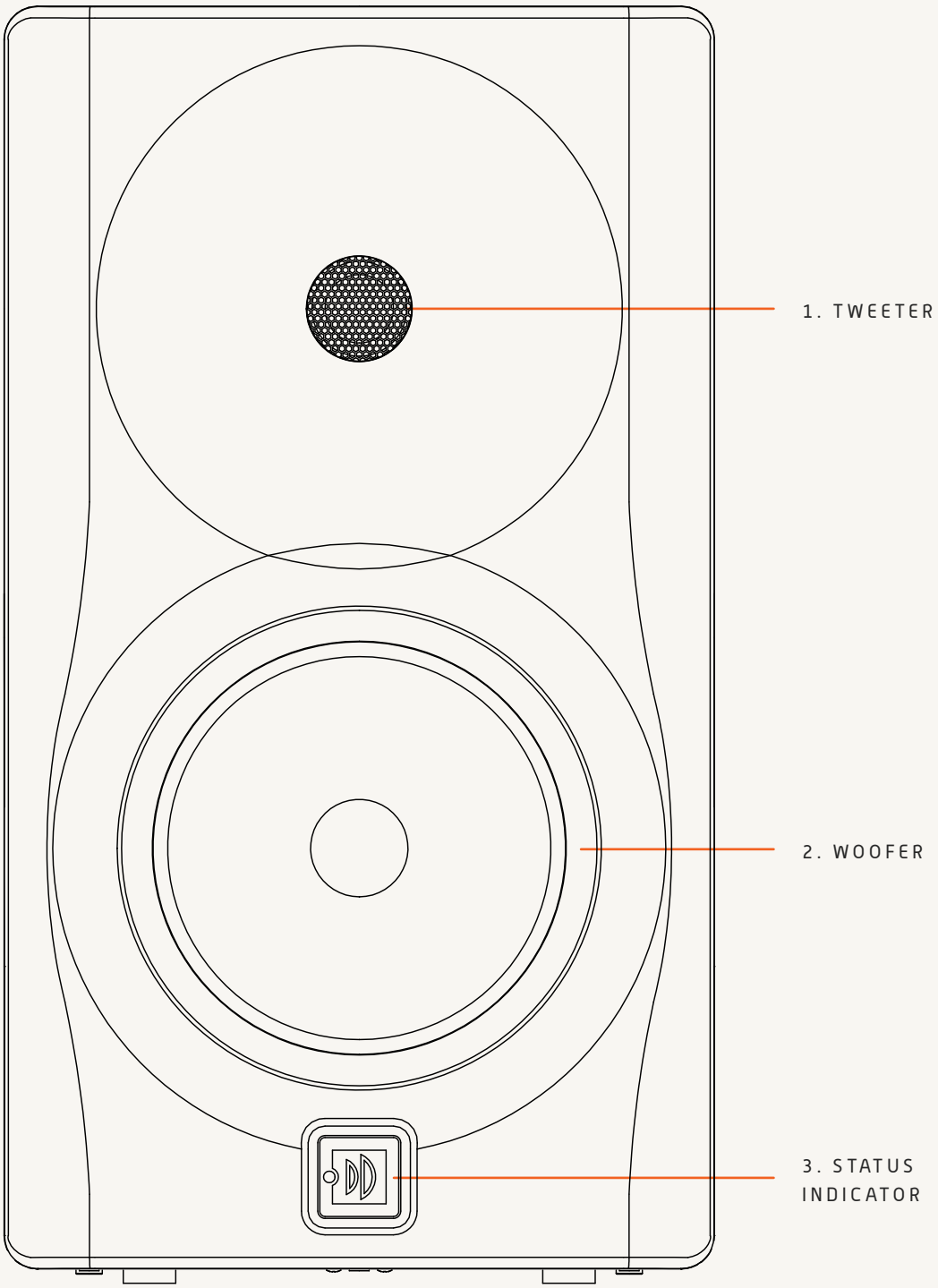
The rear section of the cabinet houses two long-stroke, high-power 8" subwoofer drivers in a sealed cabinet. The low-Q alignment results in tight, controlled, and extended bass.

Crossover and electronics

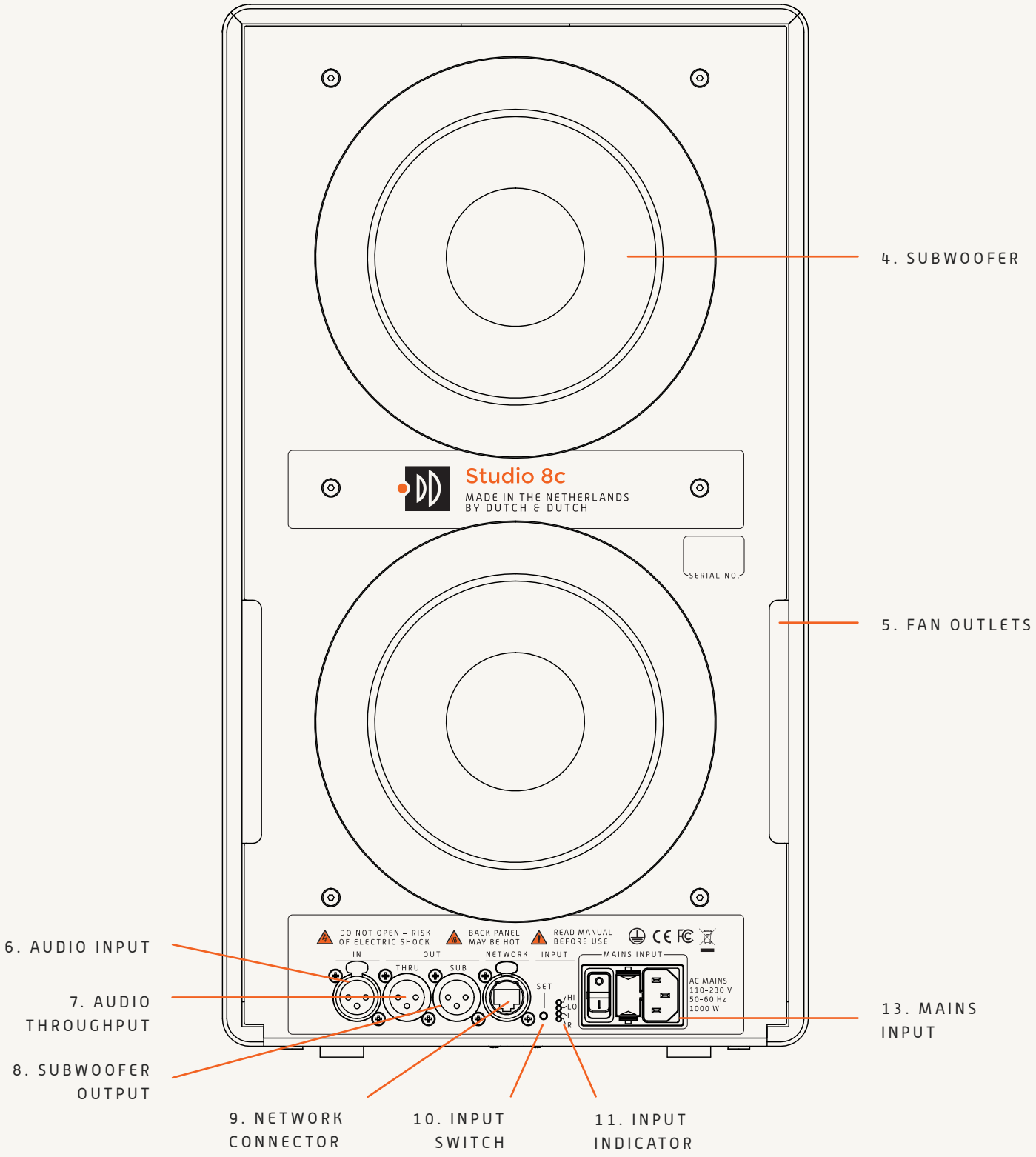
The midwoofer and tweeter are crossed over with a 4th order Linkwitz-Riley filter slopes at 1250 Hz for optimal driver integration and minimal interference. FIR filtering ensures high power handling and perfect impulse response.

A separate compartment houses the amplifiers, which provide 500 W to the subwoofers, 250 W to the midwoofer and 250 W to the tweeter, as well as the signal processing and communication electronics. Filtering, room correction and equalization options are accessible through the platform–independent Clerk™ interface, enabling easy integration into any system.

Front panel overview



Rear panel overview



Product operation

Connecting to mains power

The 8c accepts AC mains voltages between 110 and 230 V and net frequencies between 50 and 60 Hz. There is no difference in amplifier output power between 120 V and 230 V mains voltages. An IEC power cord, suited to your regional power outlets, is supplied with the 8c. Plug it into the IEC receptacle (13), then plug the other end into your wall socket.

Status LED

The logo on the 8c's front (3) doubles as a status indicator.

- Off: the loudspeaker is switched off entirely
- Dimmed pulse: the loudspeaker is in standby mode
- Bright pulse: the loudspeaker is muted
- Quick pulse: there is an error. Open the Dutch & Dutch app to see what is wrong. Alternatively, try performing a software reset (see "Settings pushbutton"). If the fault can not be remedied, contact your Dutch & Dutch representative.
- On: the loudspeaker is switched on.

In case the illumination of the logo is undesirable, it can be dimmed or switched off from the Dutch & Dutch app. Please keep in mind that the loudspeaker's status can only be monitored through the app in this case.

Connecting to a local area network

The 8c has an RJ45 receptacle (9), which can be used to connect it to your local area network (LAN), allowing the Dutch & Dutch app to find your speakers.

The 8c will work perfectly without a LAN connection: it is only required in case you wish to access equalizer settings.

Audio input

The 8c can be connnected to either digital (AES3) or (balanced) analog sources. There is one female XLR connector (6) that can be used to present these signals to the 8c. Make sure the correct preset is selected (see "Settings pushbutton").

Although it may be possible to connect unbalanced sources with adapter cables, proper functioning with regard to hum and noise is not guaranteed. Dutch & Dutch strongly recommends that balanced sources be used in order to obtain optimal gain and sound quality.

Outputs

There is a male XLR loopthrough (7) connector that can be used to loop the signal through the 8c. Make sure that both loudspeakers are set to the correct AES3 channel in case you are looping an AES3 signal from one 8c to the other. (See "Settings pushbutton").

The second male XLR connector (8) is a balanced analog output, intended primarily for use with an external active subwoofer. Various filtering and equalization options such as high– and low pass filters, peak filters, delays and phase inversion can be applied to this output.

Since there is no pre-set low-pass filter on this output, it can also be used as a fullrange filtered output.

Settings pushbutton

Basic settings can be adjusted with the "Set input" pushbutton (10) on the rear panel. Pushing the button briefly will toggle the input setting between the analog high level (+4 dBu), analog low level (-10 dBV), AES3 left channel, AES3 right channel and AES3 mono input settings. The four LEDs indicate the selected setting.

- Analog high level (+4 dBu): this setting should be used with professional audio equipment that uses the +4 dBu alignment level. The maximum peak input level before clipping is +24 dBu.
- Analog low level (-10 dBV): this setting can be used with equipment that has a lower output level, such as consumer electronics The maximum peak input level before clipping is +10 dBV.
- AES3 left (AES3 L): the left channel of a supplied AES3 signal will be used.
- AES3 right (AES3 R): the right channel of a supplied AES3 signal will be used.
- AES3 mono (both “AES3 L” and “AES3 R” indication LEDs are illuminated): the AES3 signal will be mixed to a mono signal.

In case you which to reset the loudspeaker to its factory settings, push the button for 5 seconds. This will also clear all equalizing filters and return the input to the +4 dBu setting.

Cooling fan

The 8c is equipped with a hybrid cooling system. During normal use, natural convection cooling will suffice to keep the amplifier and electronics at normal operating temperature range. In case of heavy use, a fan provides additional cooling as necessary. The fan speed is regulated to maintain a low noise level.

During the power-up process, the fan will switch on at full speed and switch off as soon as the speaker is booted up. This is a normal function check.

In case of extreme overheating, the 8c will shut down to prevent damage to its electronics.

Fuse

A 10A fuse is located in the fuse drawer next to the mains input and power switch (13). If the loudspeaker should not switch on upon operation of the power switch, inspect the fuse to make sure that it is intact. You can pry open the fuse drawer with a small flat screwdriver and, if necessary, replace the fuse inside. Make sure to use the correct rating.

However, if a fuse fails, it is most likely due to an internal electrical fault and replacing the fuse will not solve the problem. In case the new fuse also fails, the product needs to be serviced.

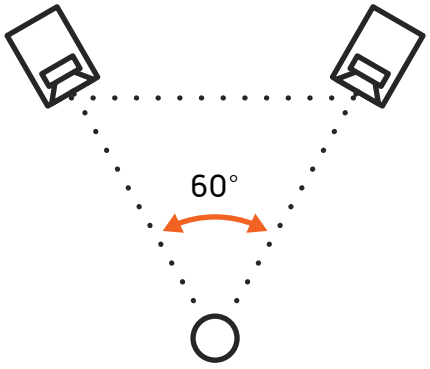
Sound optimization

Besides being highly directional, the 8c has a very flat power response. These traits make it relatively insensitive to acoustic imperfections of the listening room.

Carefully positioning and configuring the 8c will result in remarkable in-room performance.

Basic triangle

When using 8c's in a two–channel stereo setup, position them in an equilateral triangle with your listening position.

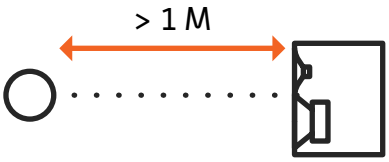


A two–channel stereo setup

Listening distance

The normal equalizer settings for the 8c yield a perfectly flat response at listening distances of 1 metre (3'3") or more.

The strength of the (accurate) direct sound from your monitors decreases by 6 dB per doubling of the listening distance. However, the strength of the (uncorrelated) reverberant sound in your room is more or less constant. As such, choosing a smaller listening distance will usually increase sound clarity.



Recommended listening distance

Listening height

The reference axis of the 8c is perpendicular to the baffle and equidistant to the woofer and tweeter axes. The loudspeakers should ideally be positioned in such a manner that the axis is near ear height. However, as long as you are within 15° of the reference axis, variations in frequency response are near imperceptible.

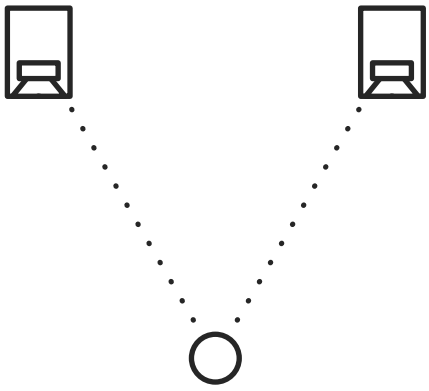


Recommended listening height

Toe-in

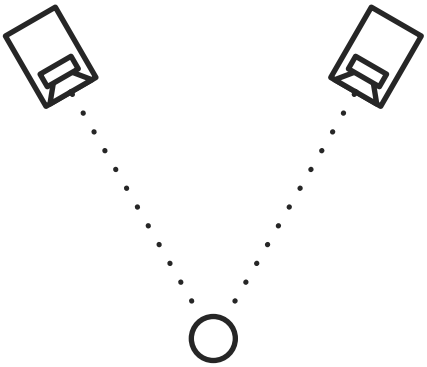
The horizontal on and off axis frequency responses of the 8c are very similar; the 8c sounds virtually the same whether you're straight in front of it or at an angle of up to 45°. As such, the direct sound will not be significantly affected by toeing the loudspeakers in (aiming them at your listening position) or out (aiming them so that they are parallel to each other). This, in turn, allows you to adjust stereo imaging without compromising the spectral balance of the sound.

Generally speaking, more toe–in will yield a more focused, precise, and drier sound by reducing the strength of lateral reflections from 100 Hz upwards. Using less toe-in will increase lateral reflections, usually resulting in livelier sound and a wider



A setup without toe–in

perceived sound stage. You can experiment with different toe–in angles to tweak the stereo image to your requirements or taste.

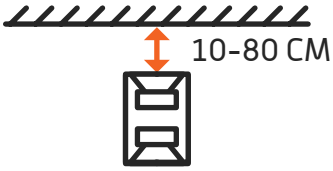


A setup with toe–in

Boundary coupling

The rear-firing woofers of the 8c can be used in boundary coupling mode. This has two advantages:

- Destructive interference between the speaker's direct sound and the reflection from the boundary is avoided because the speaker and boundary will function as a single source;
- Low frequency headroom is increased by up to 12 dB.



Distance range for boundary coupling

Using boundary coupling is not advantageous for conventional speakers, because the midrange usually suffers disproportionately from placement close to a wall. However, thanks to the high directivity of its passive cardioid cabinet, the 8c can take advantage of boundary coupling without the midrange drawbacks.

For boundary coupling to be effective, the subwoofers need to be less than 80 cm from the nearest boundary. If this is not possible, select the free-standing mode. The parametric equalizer can be used to flatten the in-room response if necessary.

If the subwoofers are within 80 cm of the nearest boundary, use the "boundary" setting to compensate for the presence of boundaries.

You can further flatten the in-room response with the parametric equalizer if necessary. Dutch & Dutch recommends that you use in-room measurements to properly optimize the equalizer settings.

Generally speaking, the closer to the wall, the better boundary coupling works. However, the subwoofers need some free space to operate properly. Therefore, make sure that there is at least 10 cm between the rear wall and the rear of the cabinet.

Technical specifications

DRIVERS:	LF: 8" ALUMINIUM CONE HF: 1" ALUMINIUM / MAGNESIUM ALLOY DOME
CROSSOVER:	1200 HZ, HIGH ORDER, PHASE COHERENT
ENCLOSURE TYPE:	BASS REFLEX
MAX LINEAR SPL @ 1M:	106 DB CONTINUOUS FROM 35 HZ UPWARDS*
AMPLIFIER POWER:	LF: 245 W HF: 100 W
AMPLIFIER TYPE:	CLASS D, POWER FACTOR CORRECTION, HYBRID COOLING
SYSTEM SNR:	>118 DB
MAINS INPUT VOLTAGE:	100 – 240 V AC, 50 – 60 HZ
DIMENSIONS (H X W X D):	480 X 270 X 380 MM** (19 X 10.5 X 15 IN)
WEIGHT:	15 KG (33 LBS)
CABINET CONSTRUCTION:	ENCLOSURE: 18 MM BIRCH PLYWOOD OUTER BAFFLE: INJECTION MOULDED ABS, DAMPED
ANALOG INPUT:	BALANCED AUDIO OVER XLR SENSITIVITY SWITCH: +4 DBU / -10 DBV PEAK INPUT LEVEL: +24 DBU / +10 DBV
ANALOG OUTPUT:	DSP CONTROLLED OUTPUT ANALOG LOOP THROUGH OVER XLR
DIGITAL INPUT:	AES3 OVER XLR LEFT / RIGHT / MONO CHANNEL SWITCH
DIGITAL OUTPUT:	AES3 LOOP THROUGH OVER XLR
NETWORKING:	ETHERNET OVER RJ45
PROTECTION FUNCTIONS:	THERMAL DC / CLIPPING DRIVER OVERLOAD

*IN HALF SPACE RADIATION CONDITIONS
**EXCLUDES RUBBER FEET

Limited warranty

Dutch & Dutch designs its products for longevity and uses only the best available components. However, no amount of care can fully exclude product failure. In the unfortunate event that the product malfunctions, we will repair or replace it.

Coverage

The Dutch & Dutch limited warranty on this product is valid for 2 years after the first consumer purchase and covers any defect or failure directly attributable to faulty design, materials, and workmanship. The Dutch & Dutch limited warranty does not cover:

- Damage sustained during shipment;
- Damage resulting from improper use, abuse, accidents, neglect, or failure to comply with the safety instructions in this manual;
- Damage resulting from repairs or modifications made by anyone who is not a technician approved by Dutch & Dutch;
- Damage to any product on which the Dutch & Dutch serial number is missing, illegible or modified;
- Claims based on misinformation or misrepresentation by a reseller.

Handling

If your product is faulty, contact Dutch & Dutch through one of the channels indicated in this manual. You will receive instructions on how to ship the affected product to us.

If the fault is covered by warranty, Dutch & Dutch will pay all expenses involved in repairing or replacing the product and shipping it back to you.