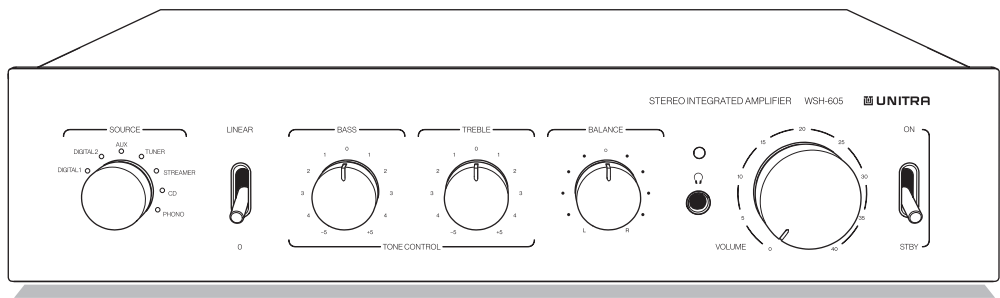


# WSH-605

## STEREO INTEGRATED AMPLIFIER

### User Manual



# Contents

**Manufacturer..... 3**

**About this document ..... 4**

    Symbols used in this manual ..... 4

    Safety ..... 4

    Acronyms, abbreviations, and technical terms ..... 5

**Description..... 5**

    Content of the package..... 5

    Front panel overview..... 6

    Rear panel overview ..... 9

    Remote control overview..... 11

    Installation of batteries  
    in the remote control..... 12

    Operation of the remote control..... 13

    Recommendations for use..... 13

    Space requirements ..... 14

**Connections ..... 15**

    Connecting a player..... 15

    Connecting a turntable ..... 16

    Connecting a power amplifier  
    or an active subwoofer ..... 17

    Connecting speakers..... 18

    Connecting a speaker set..... 22

    Connecting the AC power cable ..... 23

**Troubleshooting ..... 24**

**Warnings ..... 26**

**Critical errors..... 27**

**Technical specifications..... 28**

**Appendices ..... 30**

    Acoustic characteristics..... 30

    Block diagram..... 31

# Manufacturer



Unitra sp. z o.o.  
Przejazdowa 2b,  
02-496 Warsaw, Poland  
website: [www.unitra.com](http://www.unitra.com)

# About this document

Thank you for purchasing this Unitra product.

To ensure proper operation, read this manual carefully and operate the device in accordance with the instructions contained in it. Please keep this manual for future reference after reading it.

## Symbols used in this manual

	<b>WARNING</b>	Describes precautions to be followed to avoid the possibility of serious injury or even death.
	<b>CAUTION</b>	Describes precautions to be followed to avoid injury.
	<b>NOTICE</b>	Describes precautions to be followed to avoid malfunction or damage to the product.
	<b>NOTE</b>	Describes supplemental information about the product.

## Safety



**WARNING**  
Carefully read the Safety Brochure before use and keep it for future reference.

**Acronyms, abbreviations, and technical terms**

DAC	Digital-to-analog converter
GND	Grounding
Ohm	Electrical resistance unit
RCA	Connector type introduced by the Radio Corporation of America
RMS	Root Mean Square
THD+N	Total Harmonic Distortion + Noise

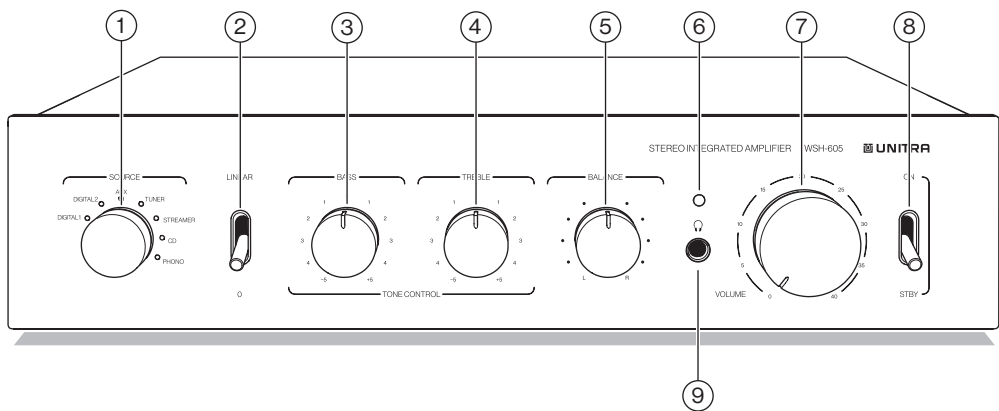
**Description**

**Content of the package**

Make sure that the following elements are included in the package:

- Device (WSH-605 Stereo Integrated Amplifier)
- Power cord
- Other cables (if specified in your order)
- Remote control (battery type CR2032 included)
- User Manual (this book)
- Safety Brochure
- Version-Specific Card
- Warranty Card

Front panel overview



1 SOURCE selector switch and indicators

The indicator light for the selected input source goes on.

DIGITAL 1/DIGITAL 2	Selects the devices connected to COAXIAL 1/ COAXIAL 2 or OPTICAL 1/OPTICAL 2 jacks as the input source.
AUX	Selects the tuner connected to the AUX jacks as the input source.
TUNER	Selects the streamer connected to the TUNER jacks as the input source.
STREAMER	Selects the streamer connected to the STREAMER jacks as the input source.
CD	Selects the CD player connected to the CD jacks as the input source.
PHONO	Selects the turntable connected to the PHONO jacks as the input source.

**NOTE**

DIGITAL 1/DIGITAL 2 select a pair of inputs as the source. From this pair, the Device selects one input where the signal appears first. We recommend using one of the inputs (COAXIAL or OPTICAL) from each pair to connect an input source.

**② LINEAR switch**

Switch up	ON	Audio signal bypasses the tone control circuit; bass and treble filters are not active.
Switch down	OFF	Audio signal goes through the tone control circuit; bass and treble filters are active.

**③ BASS knob**

To adjust the volume level of the bass range (adjustable between -10 dB and +10 dB).

**④ TREBLE knob**

To adjust the volume level of the treble range (adjustable between -10 dB and +10 dB).

**NOTE**

The BASS and TREBLE settings do not affect the signal when the LINEAR switch is set to ON.

**⑤ BALANCE knob**

To adjust the audio output balance between the left and right speakers to compensate for sound imbalances caused by the location of the speakers or the conditions of the listening room.

**⑥ Infrared signal receiver**

To receive the infrared signal from the remote control.

**⑦ VOLUME knob**

To adjust the volume level.

⑧ **ON/STANDBY switch**

Switch up	ON
Switch down	STANDBY

**NOTE**

After the Device is turned on it takes a few seconds before it can reproduce sound.

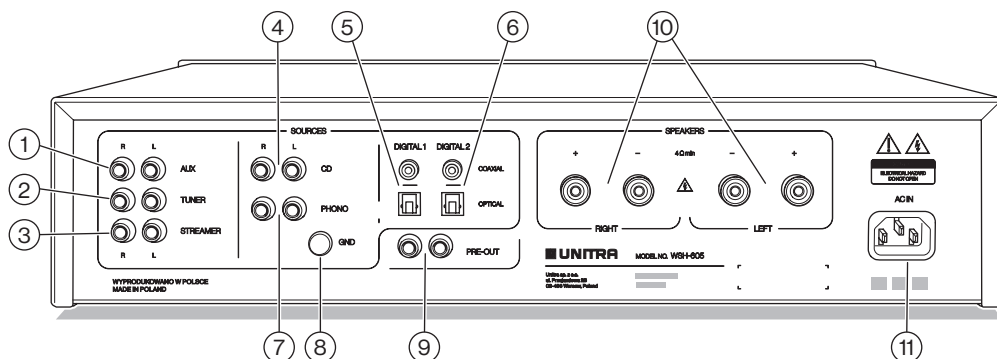
⑨ **Headphones jack (6.3 mm TRS)**

To connect headphones to the Device.

**NOTE**

When the headphones are connected, the audio signal is not output to SPEAKERS terminals.

## Rear panel overview



### ① AUX jacks

To connect any type of devices as the input source.

### ② TUNER jacks

To connect tuner devices as the input source.

### ③ STREAMER jacks

To connect streamer players as the input source.

### ④ CD jacks

To connect CD players as the input source.

### ⑤ DIGITAL 1 jacks

To connect devices with a digital output as the input source.

### ⑥ DIGITAL 2 jacks

To connect devices with a digital output as the input source.

## NOTE

DIGITAL 1/DIGITAL 2 select a pair of inputs as the source. From this pair, the Device selects one input where the signal appears first. We recommend using one of the inputs (COAXIAL or OPTICAL) from each pair to connect an input source.

### ⑦ PHONO jacks

To connect turntables as the input source.

### ⑧ GND terminal

To ground a turntable connected to the Device when a noise reduction is needed.



### ⑨ **PRE OUT jacks**

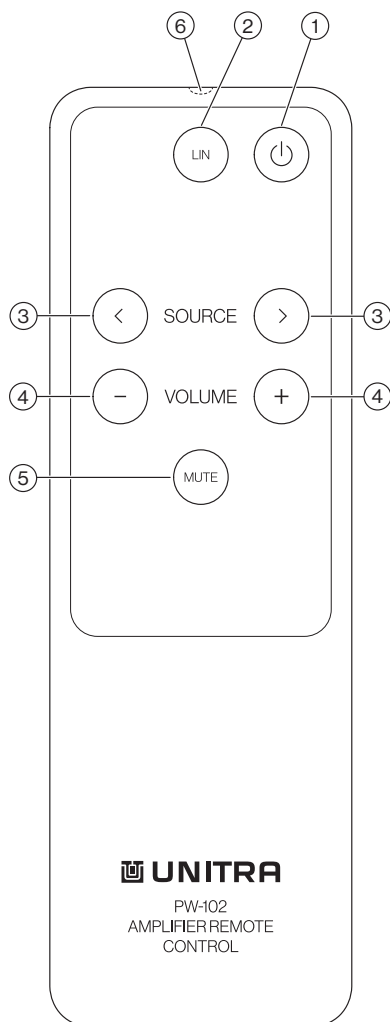
To connect an external amplifier or an active subwoofer. The audio signal output at the PRE OUT jacks is preamplified and following parameter settings are effective: BASS, TREBLE, BALANCE, CONTOUR, VOLUME.

### ⑩ **SPEAKERS terminals**

To connect the speakers.  p. 18.

### ⑪ **AC inlet**

To connect the supplied power cord.



## Remote control overview

### ① ON/STANDBY key

To switch between ON and STANDBY modes.

→ p. 7.

### ② LINEAR key

To set the linear function to ON (bass and treble filters are not active) or OFF (bass and treble filters are active).

→ p. 7.

### ③ SOURCE keys

To select the input source. Each push selects the previous or the next input source in line. The SOURCE indicator light for the selected input source goes on.

→ p. 6.

### ④ VOLUME – / + keys

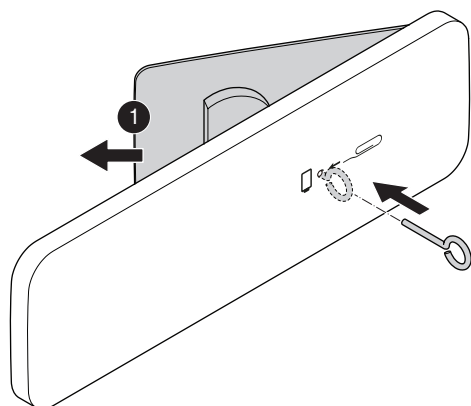
To adjust the volume level of the Device.

### ⑤ MUTE key

To mute and unmute the Device. When the Device is set to mute, the SOURCE indicator light flashes.

### ⑥ Infrared signal transmitter

To send the signal to the infrared signal receiver on the front panel.



## Installation of batteries in the remote control

### Step 1

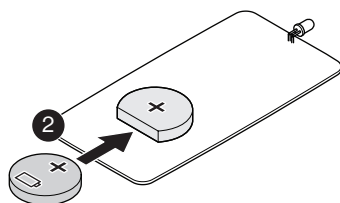
Insert a pin (e. g. a paper clip) into the hole on the back surface to remove the plate with the battery holder.

### Step 2

Insert one battery (CR2032) according to the polarity markings (+ and -) on the battery holder.

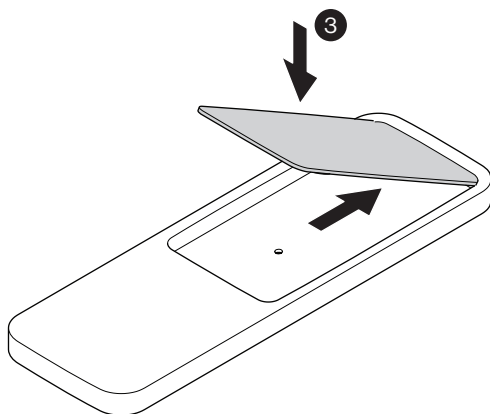
### Step 3

Install the plate with the battery holder on the remote control.



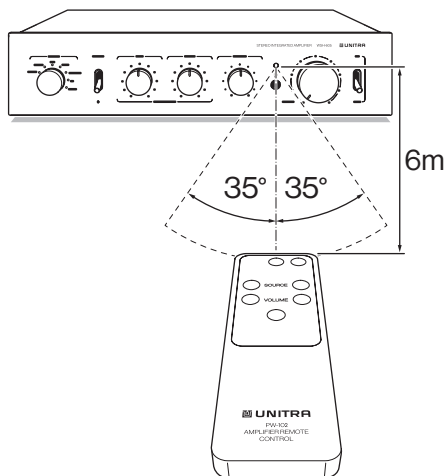
### NOTE

Before first use, remove the plate as in **Step 1** and make sure there is no foil between the battery and the battery holder.



## Operation of the remote control

Operate the remote control in the range shown in the illustration by pointing it toward the remote control signal receiver on the front panel of the Device.



## Recommendations for use

### NOTICE

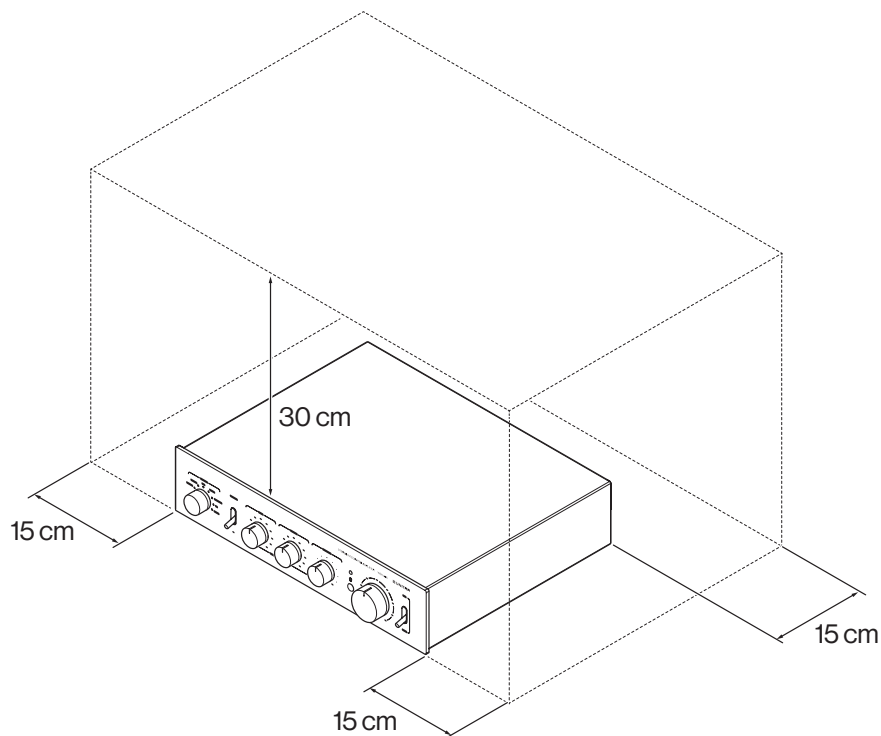
**If you plan not to use the Device for a long period of time, make sure that the Device is disconnected from the AC power source. Be aware that when the Device is in standby mode the electric current is still flowing through the unit.**

- When frequent transient states and impulse distractions in the power line happen, distractions on output connectors may occur. Those interferences may impact audio signal amplification quality and can generate sound distortions. When distractions on the power line end, the device returns to normal operation.
- For the proper operation of the device, it is not recommended to use connection cables longer than 3 m.


## Space requirements


### NOTICE

Make sure to leave the required space around the unit for air circulation as shown below to improve heat radiation. There is a risk of overheating.

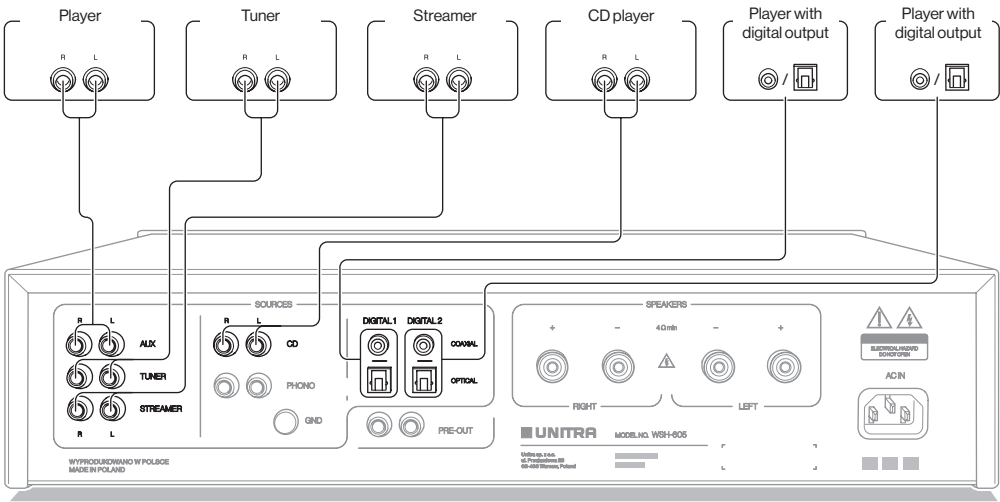


# Connections



**CAUTION**  
Do the input and output connections before connecting the Device to the AC power source.  p. 23.

## Connecting a player



Use the SOURCE selector switch to select a player as the input source.  p. 6.

**NOTE**

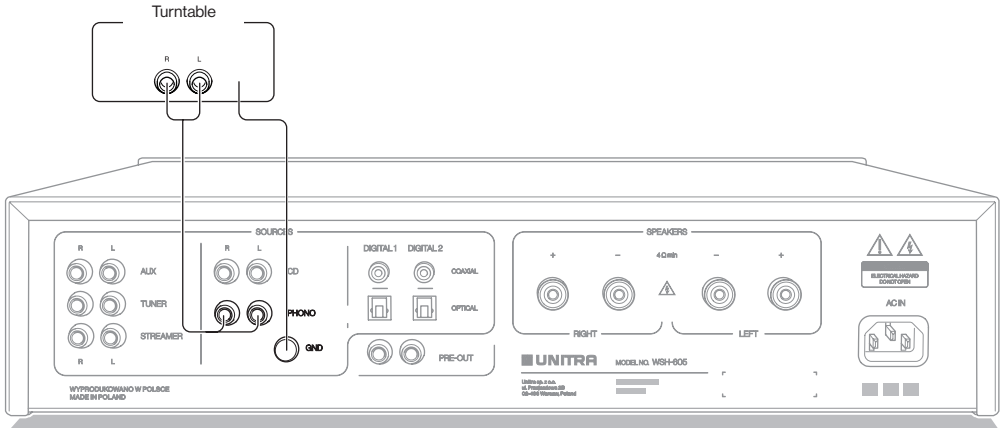
DIGITAL 1/DIGITAL 2 select a pair of inputs as the source. From this pair, the Device selects one input where the signal appears first. We recommend using one of the inputs (COAXIAL or OPTICAL) from each pair to connect an input source.

## Connecting a turntable



### WARNING

Do not remove the GND terminal knob or loosen it excessively. The knob can fall off and there is a choking hazard for children.



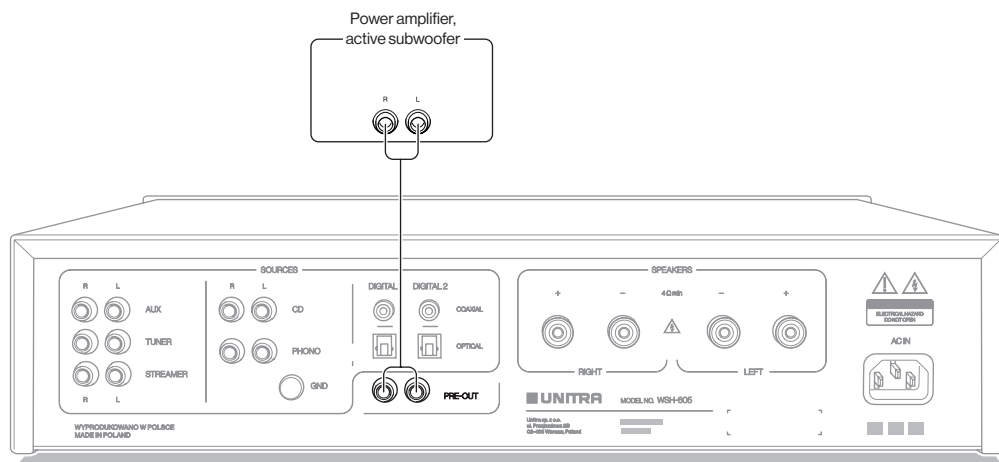
Use the SOURCE selector switch to select the turntable as the input source. p. 6.

Connect the ground wire to the GND terminal to reduce noise.

### NOTE

The GND connection is not a safety ground.

## Connecting a power amplifier or an active subwoofer



The audio signals output at the PRE OUT jacks pass only through the internal preamplifier block of the Device. ➔ p. 31.

You can connect an external power amplifier or an active subwoofer to the PRE OUT jacks. Use a dual RCA cable for this connection.

The following parameter settings are effective for audio signals output at the PRE OUT jacks:

- BASS
- TREBLE
- BALANCE
- VOLUME



## Connecting speakers

### Types of speaker connections

**WARNING**

Do not remove the knob or loosen it excessively. The knob can fall off and there is a choking hazard for children.

**WARNING**

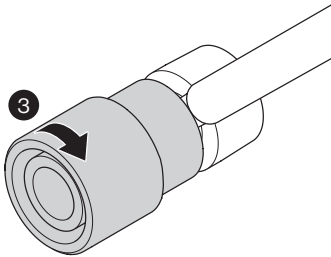
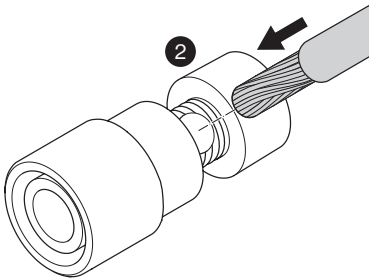
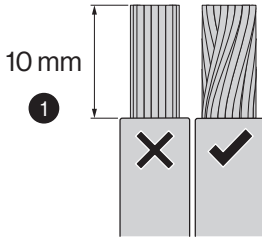
To reduce the risk of electric shock Do not touch the speaker terminal when the Device is connected to an AC power source.

**CAUTION**

Make sure that the terminal and the connector contact area is the largest possible and the connections are not loose.

**NOTE**

All connectors must be connected to the correct terminals: L (left) to L, R (right) to R, “+” to “+”, and “-” to “-”. For information regarding the connection procedure, refer to the user manual for your speakers.



## Connection with speaker cables

### NOTICE

Do not let the bare speaker wires touch each other, nor any metal part of the Device. Otherwise, the Device and/or the speakers may be damaged.

### Step 1

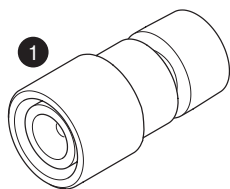
Remove approximately 10 mm of the insulation from the end of the speaker cable and twist the exposed wires tightly together to prevent short circuits.

### Step 2

Loosen the knob at the SPEAKER terminal and insert the wires, twisted in **Step 1**, into the side hole on the terminal.

### Step 3

Tighten the knob.



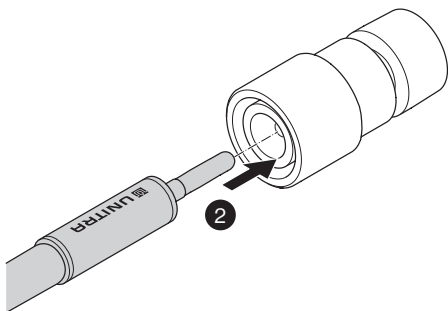
## Connection with banana plug cables

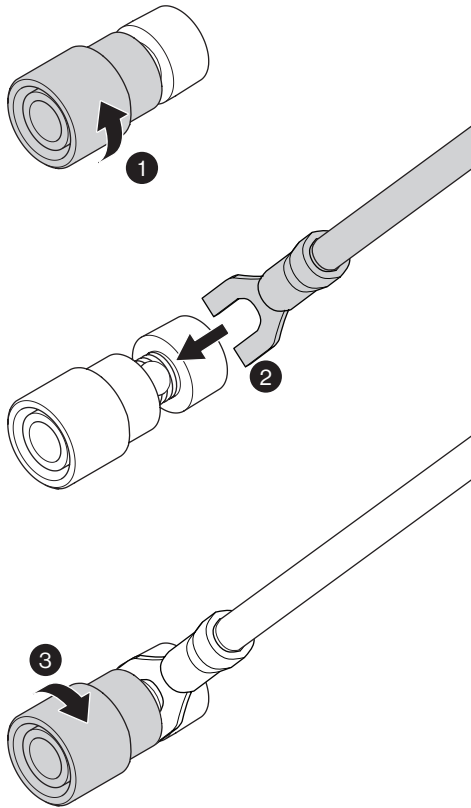
### Step 1

Tighten the knob in the SPEAKER terminal.

### Step 2

Insert the banana plug into the head of the knob.





### Connection with Y-shaped lug cables

#### Step 1

Loosen the knob at the SPEAKER terminal.

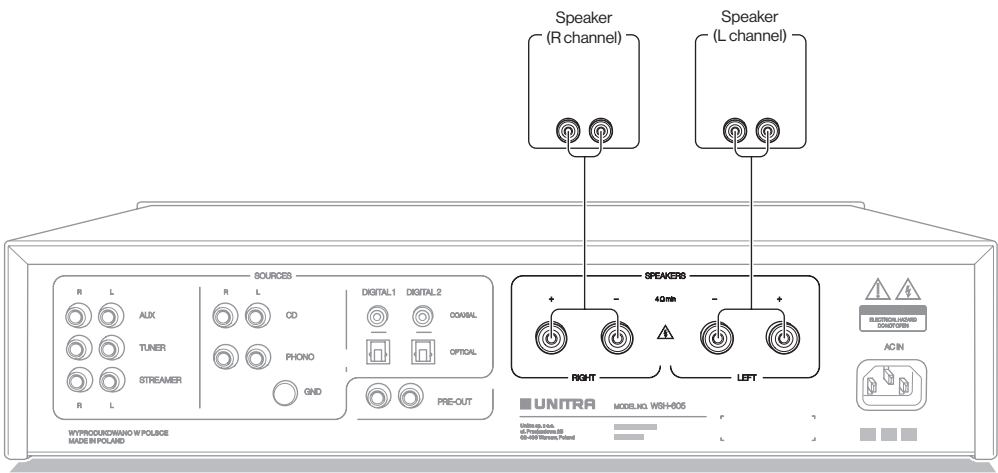
#### Step 2

Insert the Y-shaped lug between the ring part and the base of the terminal.

#### Step 3

Tighten the knob.

Connecting a speaker set



## Connecting the AC power cable



### CAUTION

Install the Device in accordance with the Safety Brochure (section Installation) enclosed to this product.

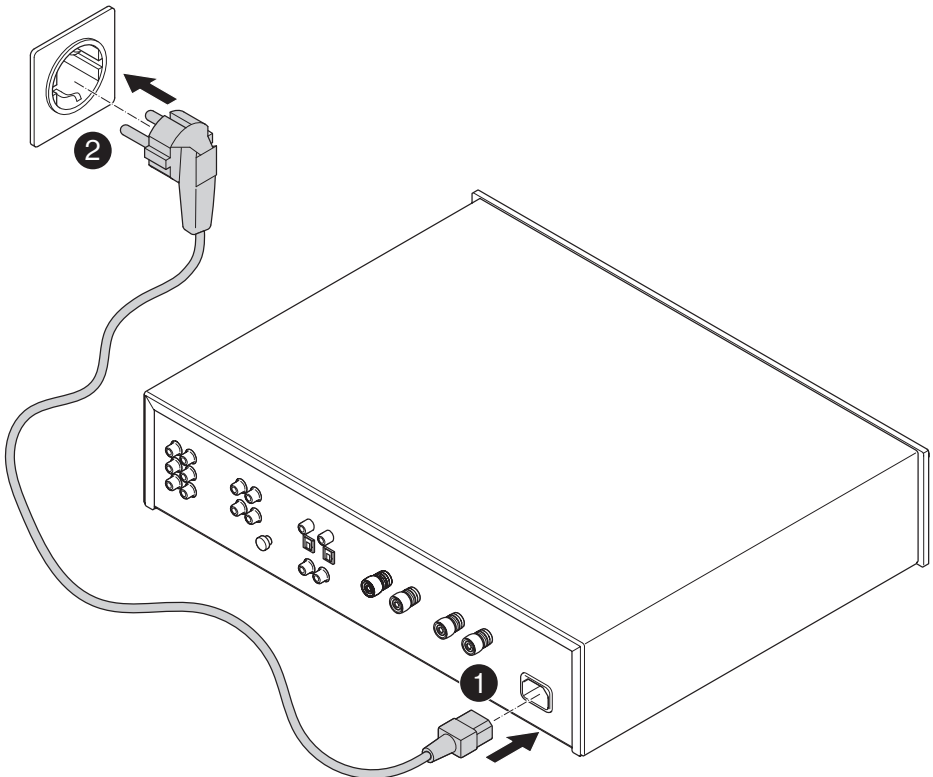
After all connections are ready, you can connect the Device to the AC power source.

### Step 1

Connect the power cord to the AC inlet.




### Step 2



Connect the power cord to the AC power source with earthing.



# Troubleshooting

Most difficulties in audio systems are the result of incorrect connections, or improper control settings. If you encounter problems, isolate the area of the difficulty, check the control settings, determine the cause of the fault and make the necessary changes. If you are unable to get sound from the Device, refer to the suggestions for the following conditions:


Problem	Cause	Remedy
The power does not turn on.	The power cable is not connected to the AC inlet on the rear panel or is not connected to an AC power source.	Make sure that the power cord is properly connected to the power source. After that, disconnect the power cord from the power source, wait for at least 5 seconds and connect the power cord again.  p. 23.
There is no sound from the speakers.	The signal source is not functioning properly.	Check the signal source to see if it functions properly.
	The cables from the signal source are not connected properly.	Make sure that the cables from the signal source to the amplifier input jacks are connected properly.
	The correct input source is not selected.	Make sure that the SOURCE selector switch is set to the correct input.
	Headphones are connected.	Make sure that headphones are not connected to the headphones jack.
	The wiring between the amplifier and the speakers is not correct.	Check the wiring between the amplifier and the speakers.
	The VOLUME knob is set to minimum.	Make sure that the VOLUME knob position is not set to minimum.
There is no sound in the headphones.	The Device is set to MUTE.	Make sure that the Device is not set to MUTE. When the Device is set to MUTE, the SOURCE indicator light flashes.
	The headphones plug is not clean or the cable is damaged.	Clean the headphones plug. Search through your headphones instruction manual for cleaning information. Make sure that the headphones cable is not broken or damaged.
All SOURCE indicators are flashing quickly but the Device is still functioning.	There is a risk of damage to the Device, so a protective measure (a warning) is activated.	Check the list of warnings to find the specific cause and remedy.  p. 25.
Some of the SOURCE indicators are flashing and the Device stopped functioning.	There is a risk of damage to the Device, so a protective measure (a critical error) is activated.	Check the list of critical errors to find the specific cause and remedy.  p. 27.

The sound quality is not good.	The cables are not properly connected.	Make sure that the speaker cables are connected with the correct polarity and that are pushed into the terminal all the way.
	The quality is affected by magnetic fields or high-intensity radio waves.	<ul style="list-style-type: none"> <li>• Try to move any devices emitting strong magnetic fields, such as a TV, away from the Device.</li> <li>• Try to move devices with high-intensity radio waves, such as cellular phones, away from the Device.</li> </ul>
The sound from the turntable is distorted or too low.	The ground wire is not connected.	Check if the ground wire is connected to the GND terminal on the Device.  p. 9.
	The turntable is connected to the wrong jacks.	Make sure that you connected the turntable to the PHONO jacks.
The remote control doesn't work properly.	There is a problem with the battery.	<p>Make sure that the battery is installed with the correct polarity (+/-).</p> <p>Replace the battery with a new one.  p. 12.</p>
	The distance between the remote control and the Device is too high or there is an obstacle between them.	<ul style="list-style-type: none"> <li>• Make sure that the distance between the remote control and the Device is less than 6m away.</li> <li>• Make sure that there are no obstacles between the remote control and the Device (e.g. cabinet doors).</li> </ul>



# Warnings

When warnings occur all SOURCE indicators are flashing quickly for 5 seconds.

Type or warning	Description
Overcurrent protection	<ul style="list-style-type: none"><li>• If this warning occurs, the output signal on terminals is disconnected for 5 seconds.</li><li>• If this warning occurs for the second time over a short period of time, the output signal on terminals is disconnected for 5 seconds and the volume decreases automatically.</li><li>• If the overcurrent event occurs repeatedly over short periods of time, a critical error activates.  p. 27.</li></ul>
Clipping protection	<ul style="list-style-type: none"><li>• When the Device is overdriven and starts delivering an output voltage beyond its maximum capability a warning activates.</li><li>• The Device reduces its volume to a point where clipping is not detected and the signal is not distorted.</li></ul>

# Critical errors

When a critical error occurs, the Device stops functioning to prevent its damage. The type of error is indicated with a pattern of slowly flashing SOURCE indicators as shown below.

To reset a critical error, disconnect the power cord from the AC power source or set the STANDBY mode, wait for at least 3 minutes and switch the Device on.

Error number	SOURCE indicators flashing pattern*	Cause	Remedy
15	○○○●●●●●	Overheated unit	Disconnect the power cord from the AC power source. Wait for 30 minutes, connect the power cord and switch the Device on.
11	○○○●○○●●	Abnormal DC voltage of amplifier output	<ul style="list-style-type: none"> <li>• Disconnect the power cord from the AC power source.</li> <li>• Disconnect the speakers from the Device.</li> <li>• Contact the Manufacturer or the official reseller.</li> </ul>
13	○○○●●○○●	Output overcurrent	<ul style="list-style-type: none"> <li>• Check the speaker wiring and terminals.</li> <li>• Make sure that bare metal parts such as other appliances, room heaters etc. are far from the terminals.</li> <li>• In case this error occurs occasionally, at high volume levels, with speakers that have a minimum required impedance, keep the volume at a lower level.</li> </ul>
10	○○○●○○○	Hardware error	Disconnect the power cord from the AC power source and contact the Manufacturer or the official reseller.

\*○ - Off  
● - Flashing

# Technical specifications

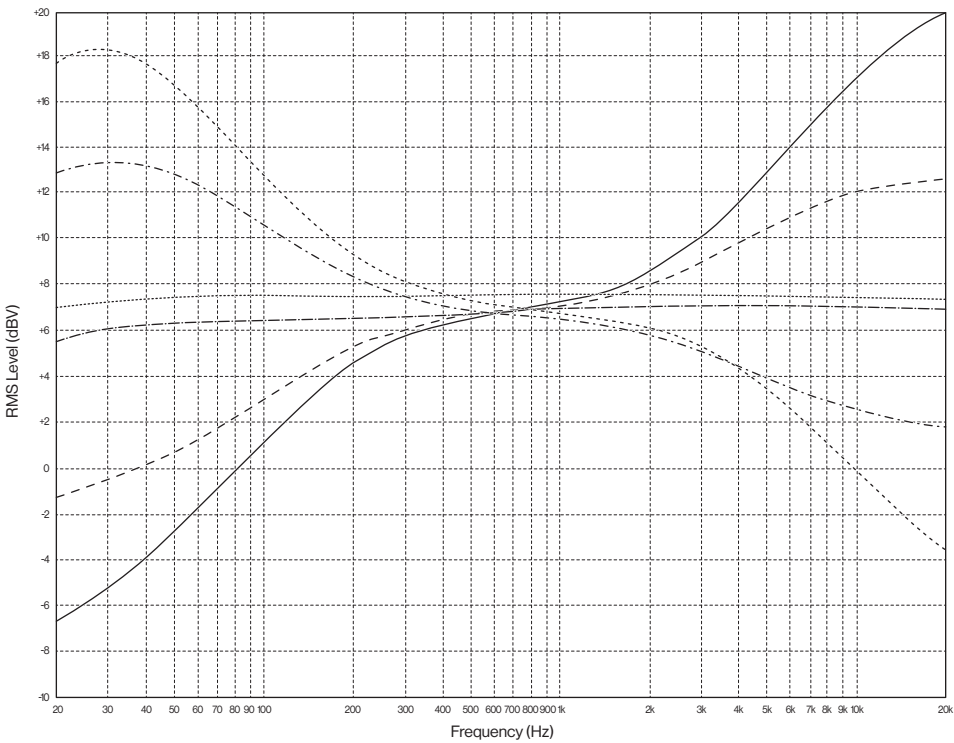
Output power (THD+N ≤ 1%, both channels driven, according to IEC 60268-3)	8 Ω	2x 70 W
	4 Ω	2x 110 W
Output power – digital input at full scale (THD+N ≤ 0.001%, both channels driven, according to IEC 60268-3)	8 Ω	2x 70 W
	4 Ω	2x 110 W
Input sensitivity and impedance (at output THD+N ≤ 1%, according to PN-EN IEC 60268-3)	PHONO LINE IN (AUX, TUNER, CD, STREAMER)	12.8 mV <sub>RMS</sub> *
		47 kΩ
		1360 mV <sub>RMS</sub> *
		94 kΩ
DAC	ESS SABRE	
Supported digital audio format	PCM	up to 192 kHz 24 bit
Maximum Input Voltage (1 kHz, no internal clipping)	LINE IN (AUX, TUNER, CD, STREAMER)	4000 mV <sub>RMS</sub>
Frequency response (8Ω, 3W output power, both channels driven, AUX, TUNER, CD, STREAMER inputs)	-1.0 dB point	13 Hz — 41 kHz
	-3.0 dB point	7.5 Hz — 75 kHz
Rated output voltage and impedance	PRE OUT	2 V <sub>RMS</sub> * <100 Ω
Total Harmonic Distortion plus Noise (1 kHz, 8Ω load, speaker output, both channels driven, AUX, TUNER, CD, STREAMER inputs)	1 W	< 0.005%
	7.2 W	< 0.0018%
	60 W	< 0.008%
Total Harmonic Distortion plus Noise (1 kHz, 8Ω load, speaker output, both channels driven, DIGITAL1, DIGITAL2 inputs)	7.2 W	< 0.0016%
	60 W	< 0.0008%
Headphones jack rated output power (1 kHz, 32 Ω, THD+N ≤ 1%, both channels driven)	2 x 47 mW	
Damping factor (1kHz, 8Ω)	> 240	
Slew Rate	> 31 V/μs	

Channel separation (1 kHz, 10 W, AUX, TUNER, CD, STREAMER, DIGITAL1, DIGITAL2 inputs)	75 dB	
Dynamic range (according to AES17)	108.8 dB	
Tone control characteristics	30 Hz	-12 db — +12 db
	20 kHz	-10 db — +13 db
Intermodular distortions (CCIF IMD)	19 + 20 kHz, 10 W	< 0.0005 %
Dimensions (Width × Depth × Height)	440 mm × 372 mm × 104 mm	
Mass	11.8 kg	
Indoor/outdoor use	Indoor use only	
Insulation category	Class I	
EMC environment	Group 1 class B	

Appendices

Acoustic characteristics

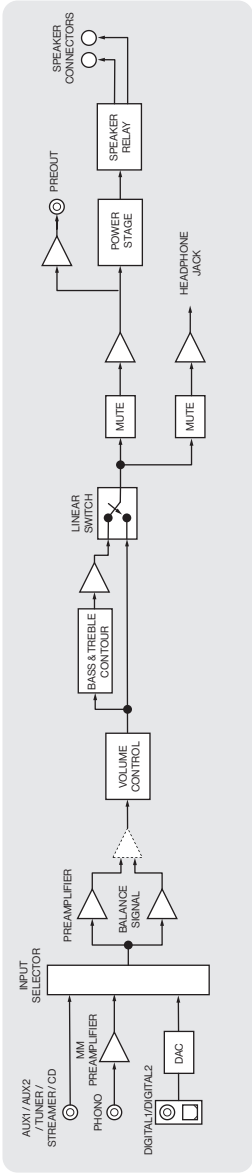
Tone control characteristics



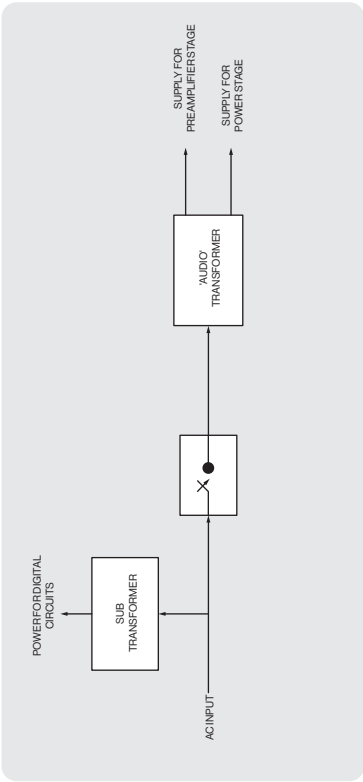
Linear OFF, BASS/TREBLE: -5, -3, -1, 0, +1, +3, +5

Block diagram

Audio path – single channel



Power



Legend

- COAX and OPTICAL connector
- RCA connector
- Output speakers connector
- Functional block
- Audio amplifier
- Debalancer audio
- Relay
- Switch
- Audio signal



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Revision 1 (2024-10-09)

For more information go to:  
<https://www.unitra.com/>  
or scan QR code below.

