POLAR 10

Welcome to the HK Audio family!

Thank you for choosing a brand-name product made by our company. It was engineered and built with the greatest care so it will serve you well for many tomorrows to come.

Even if your experience with sound systems runs deep, some things about this product are sure to be new to you. This is why we ask that you do not set this manual aside without reading it first. Be sure to keep it in a safe place for later reference.

Here's wishing you the best sound at every occasion!

Your HK Audio team

Strong electromagnetic interference or electrostatic discharge may prevent the product from functioning normally. If this happens, the product may be returned to normal operation by powering off and on again. Should this not result in the product functioning normally again, please move the product away from the source of disturbance and try again.

Warranty

Use the convenient online registration option at www.hkaudio.com.

http://warranty.hkaudio.com

The registration is only valid if the device is registered within 30 days of the date of purchase.

HK Audio
Technischer Service
Postfach 1509
66595 St. Wendel, Germany
Fax: +49 6851 905 100

1 General Information

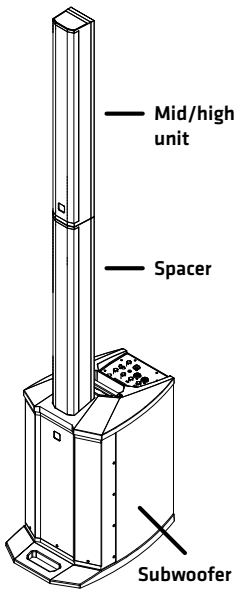
1.1 Unpacking and Inventory

Please remove the entire system from the cartons and make sure you have received all its component parts. POLAR comes in two cartons and consists of a subwoofer, a columnar mid/high unit and a spacer. The shipping box for the subwoofer also contains a padded protective cover for the bass bin, a gig bag for the two columnar elements, and the mains power cord.

1.2 The Components

The Subwoofer

The powered subwoofer houses the bass woofer, the system's electronic components and the power amplifiers. On the top panel is a signal-carrying, plug-in port serving to connect the column's elements and a carrying handle. Another handy grip routed into the front of the bottom panel lets you comfortably carry the subwoofer with one or two hands. The integrated control panel with the display, control features and connectors slopes slightly toward the rear to protect the controls against damage. The bass reflex ports are located at the bottom of the front panel. The power off/on switch and mains socket are on the rear panel.



The Column

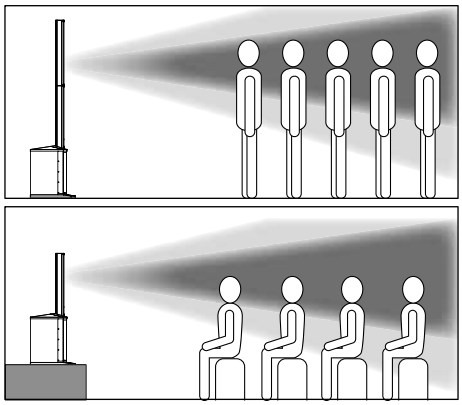
- The column consists of a mid/high unit and a spacer.
- The spacer plugs into a signal-carrying socket/coupler on the subwoofer. The mid/high unit plugs into the spacer using the same type of connector.
- This coupler provides a mechanical and electrical connection between the mid/high unit and spacer, so you do not need speaker cables to connect the two.

1.3 Setting up the System

Connecting Components

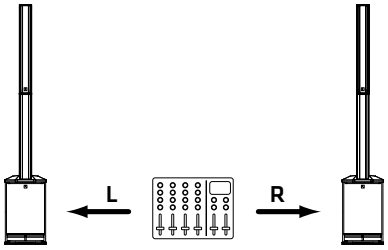
- Place the subwoofer on a level, stable surface.
- Connect the spacer and the mid/high unit to the subwoofer as described in section 1.2 above.
- Make sure the components are firmly seated and connected to one another.
- Plug the power cord into the rear mains power socket.

Heads up: Feel free to set the system up without a spacer if you wish to place it on a high stage, table or the like.



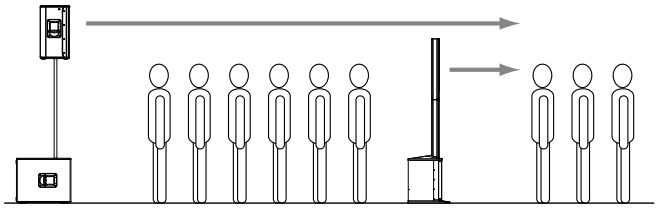
Caution! Do not transport or otherwise move an assembled POLAR system. This could damage it, or if it tips, injure people or destroy property.

Stereo Setup



If you wish to run two POLARs in stereo, route the mixing console's left channel to the system on the left and its right channel to the system on the right. Make sure the DSP settings for Mode, EQ, Delay, and so on are identical for both systems. See chapter 3 for more on this.

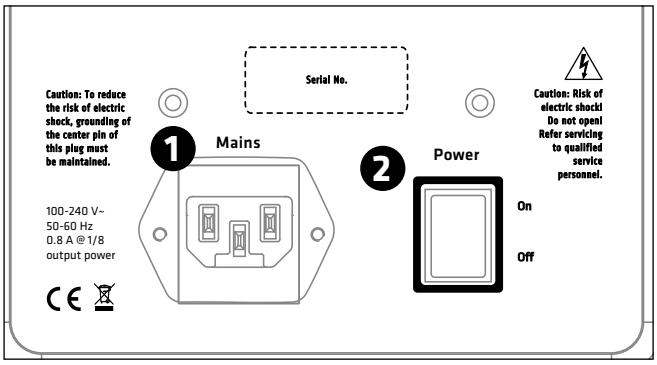
Delay Line for Distributed Systems



POLAR's Delay function lets you use it for a delay line. See section 3.2, Delay, to learn more about this. All you have to do is measure the distance between the main speaker and POLAR in meters, and enter that number to "Delay" in the DSP menu. POLAR factors the main speaker's delay into the equation, automatically calculates the delay time, and renders the signal with the proper delay.

2 Connectors and Control Features

Rear Panel



1 Mains

Please use the factory-included power cable to connect this IEC mains socket to a wall outlet.

Heads up: The built-in switching power unit features a wide-range input that automatically adapts to AC voltages ranging from 100 V to 240 V at 50 or 60 Hz.

2 Power

This on/off button powers the system up and down. When you switch POLAR on, it loads the most recently used DSP settings and will be ready to operate within seconds when the four channels' level indicators and the Master volume setting appear in the display.

Channel 1 and Channel 2 (Line/Mic)

Channel 1 and 2's feature sets are identical. These channels accept microphones and line-level instruments such as keyboards.

3 Input

This balanced XLR / 1/4" (6.35 mm) combo jack accepts an XLR connector or a balanced or unbalanced 1/4" (6.35 mm) jack plug.

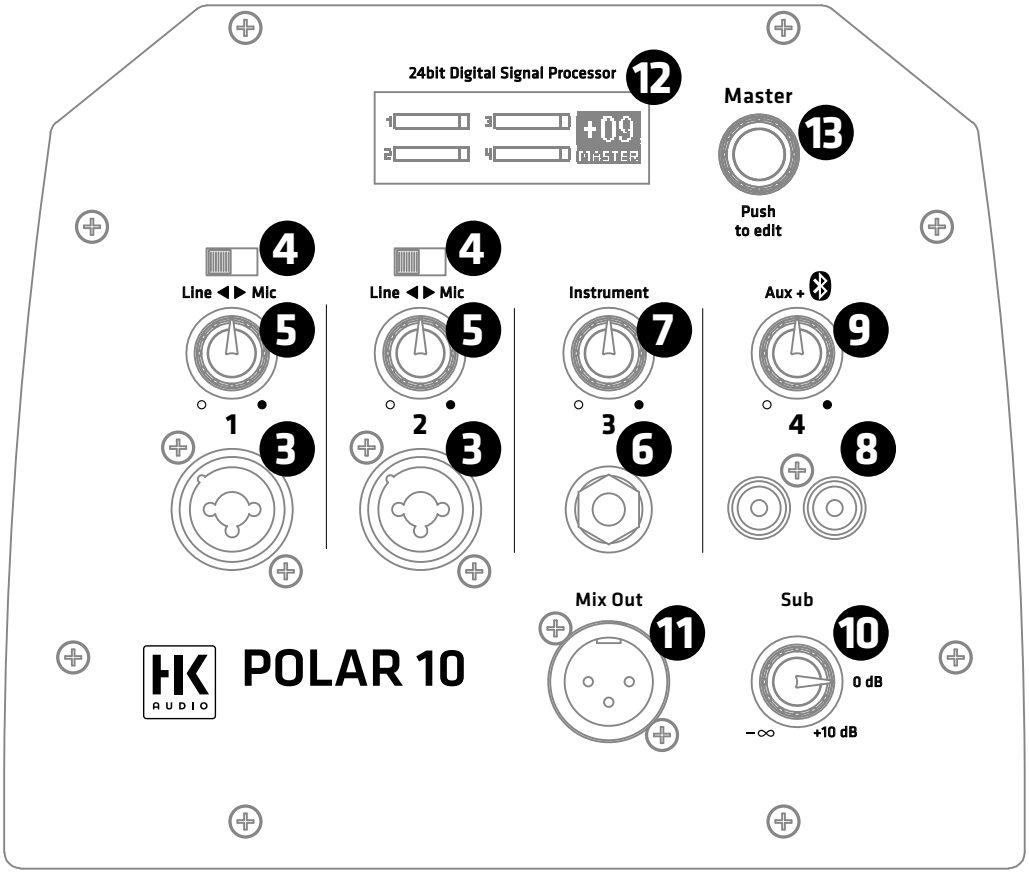
Heads up: A balanced signal is always preferable because it is less susceptible to HF and other interference.

4 Line/Mic

Adjust the preamplifiers' gain and impedance with this selector. Set it to Line to connect a line-level device such as a mixing console, keyboard or the like. Set it to Mic to connect a dynamic microphone.

5 Volume

Turn this knob to adjust the signal level. Twist it counterclockwise to the far left to turn the volume all the way down and clockwise to the far right to turn it all the way up.



Channel 3 (Instrument)

Use this input to connect an instrument with high-impedance (Hi-Z) output signals such as an electric or acoustic guitar or bass or an electric piano. The high-impedance input stage renders the instrument's full tonal and dynamic range.

6 Input

Connect instruments to this unbalanced 1/4" (6.35 mm) jack.

7 Volume

Turn this knob to adjust the signal level. Twist it counterclockwise to the far left to turn the volume all the way down and clockwise to the far right to turn it all the way up.

Channel 4 (Aux + Bluetooth)

Connect stereo sources such as DJ consoles, CD/MP3 players or mixing consoles to Channel 4 and use it to stream audio via Bluetooth. Channel 4 accepts and renders Aux and Bluetooth signals at the same time.

8 Input

Connect audio sources with high output levels such as a CD/MP3 player, smartphone, DJ mixer or a computer to this unbalanced input consisting of two RCA/cinch connectors.

9 Volume

Turn this knob to adjust the signal level for both the Aux and Bluetooth inputs. Twist it counterclockwise to the far left to turn the volume all the way down and clockwise to the far right to turn it all the way up.

Heads up: When using the Aux input while streaming audio via Bluetooth, balance the two signal levels by adjusting the Bluetooth player's volume to match that of the incoming Aux signal.

10 Sub

Turn this knob to adjust the amount of bass. Twist it counterclockwise to the far left to turn the bass all the way down and clockwise to the far right to turn it all the way up. Turn the Sub knob to 0 dB to achieve a relatively balanced volume between the column and the subwoofer.

Good to know: It is often a good idea to back off the bass slightly when placing the subwoofer in a corner or in very small rooms. Reducing the amount of bass also increases the system's peak volume without triggering its limiter circuits.

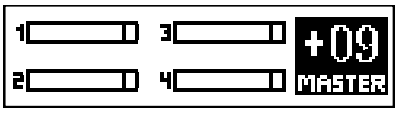
11 Mix Out

This balanced XLR output provides a summed signal – that is, a mix of all input channels' signals.

Heads up: Mix Out serves to forward the summed signal to an FOH mixer, other speakers, monitors or recording device. You can also send it another powered subwoofer if the unit has a high-cut or low-pass filter to suppress high frequencies.

⓬ LCD Display

In normal operating mode, this display indicates the input channels' levels and the master volume.



In DSP mode, it shows the parameters of the currently selected DSP menu. See section 3.2, DSP Settings, for more on this.

Level Indicators

The four level indicators show the input channels' levels. The Overload section tells you the incoming signal is saturating the input because its level is too high. If Overload lights up, turn down the channel's input gain and/or the connected device's output level.

Heads up: POLAR has enough dynamic range to handle occasional spikes where the signal peaks out. However, if an Overload indicator lights up continuously or it sounds like the signal is clipping, turn the given channel's volume down to prevent the distortion produced by an overloaded system.

Good to know: It is important to dial in the proper signal levels to minimize noise. The best way to do this is by maxing out the channel levels: turn up the input channels' volume until the Overload indicator lights up at the loudest signal peak, and then back it off just enough so the Overload indicator no longer lights up. Then turn the Master knob up only as far as you need it to go.

⓭ Master (push to edit)

The Master knob on the right of the display serves primarily to adjust the system's overall volume. The display indicates the current value; the control range sweeps from -60 to +10 dB in 1 dB increments.

3 DSP Menu

Press the Master knob (push to edit) to access and edit various DSP parameters listed in a menu. The display shows the currently selected parameter.

- Turn the Master knob to navigate the menu. Press it to select the current menu option or confirm your entry.

Note: POLAR will exit the selected menu option and automatically return to the main Master Volume window if you do not make or confirm an entry within eight seconds. It does this to prevent inadvertent operating errors.

Heads up: The system's memory stores all current DSP settings when you power it down and reloads those settings when you power the system back up again.

The following functions are available:

3.1 Bluetooth

Bluetooth →	Pairing: activate Bluetooth connection (push again to activate pairing process)

POLAR can stream audio via Bluetooth, which is a wireless way of rendering music on mobile Bluetooth-enabled players such as smartphones and tablet PCs.

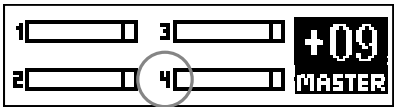
Connecting to a Bluetooth device

- Press the master knob once. The display will show the menu option "Bluetooth".
- Press the Master knob again ("Pairing") to start the Bluetooth connection process known as pairing. Bluetooth-enabled devices should now be able to discover POLAR. The Bluetooth icon in the display flashes slowly for 120 seconds, indicating that you can pair the system with a Bluetooth-enabled device during this two-minute window.
- Go to the Bluetooth menu of your player and select "HK Audio POLAR" to pair the two devices.
- The Bluetooth symbol lights up continuously in the POLAR display as soon as the two are properly paired.

The display indicates the Bluetooth status:

• Display shows the number 4 rather than a Bluetooth icon

Bluetooth is off

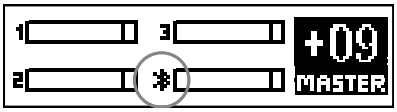


• Icon flashes slowly

You have 120 seconds to pair devices

• Bluetooth icon lights up continuously

Devices are connected



• Icon flashes quickly

Bluetooth pairing failed or the connection dropped out (e.g. out of Bluetooth range)

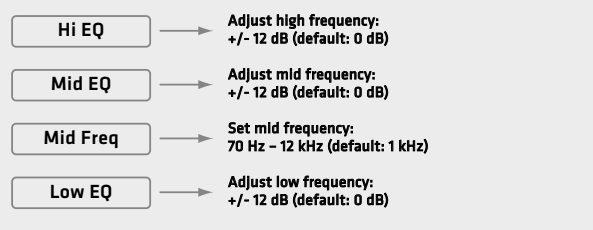
Heads up: If the Bluetooth icon flashes quickly, check if your Bluetooth device is within range, Bluetooth is enabled, and POLAR is selected in the list of Bluetooth devices. If POLAR does not appear in the list of Bluetooth devices, try Bluetooth Pairing again to reconnect.

Channel 4 renders audio signals sent from the Bluetooth device. Adjust the level with channel 4's Volume knob or with the control on the Bluetooth device. We strongly recommend turning channel 4's volume down before you hit the play button on your Bluetooth device.

Read chapter 4 to learn more about Bluetooth.

3.2 Settings

System EQ



POLAR's three-band EQ serves to tune the system's overall sound. Hi EQ and Lo EQ are shelving filters; Mid EQ is semi-parametric.

Good to know: Use these tone controls to tweak the overall sound to suit the application and your taste. It is often a good idea to dial down the bass a bit in small rooms with short distances between the system and walls and audiences. The same goes for high frequencies when a sensitive microphone or highly reflective surfaces such as glass walls or windows increase the likelihood of feedback. Use the semi-parametric midrange band to cut a specific frequency that is interfering with your sound or boost a frequency range that sounds a little thin.

Hi EQ: Use this parameter to boost or cut high frequencies.
Control range: +/-12 dB • Frequency: 12 kHz

Mid EQ: Use this parameter to boost or cut midrange frequencies.
Control range +/-12 dB

Mid Freq: Use this parameter to select and adjust the midrange center frequency. Frequency range: 70 Hz - 12 kHz

Low EQ: Use this parameter to boost or cut low frequencies.
Control range: +/-12 dB • Frequency: 70 Hz

Heads up: the EQ only applies to the speakers, it has no effect on the Mix Out.

Mode

Three preprogrammed modes let you tune the system's sound to suit the application.

Music: This mode is your go-to choice for live applications and playing all kinds of music, apart from electronic music.

Voice: Optimized for the human voice, this mode is good for speaking engagements and for other speech applications.

DJ: This mode is the best choice for playing electronic music.

Heads up: Changing the Music/Voice/DJ mode does not overwrite the three-band EQ's settings. The three-band EQ is an independent, additional sound-shaping tool.

Delay

Use the "Delay" menu option if you need to delay the audio signal rendered by the POLAR speakers. The system makes it easy to do this: simply set the delay from 0 (off) to 100 meters in 0.25-meter increments.

Heads up: The delay function comes very handy if you want to use POLAR as a delay line for larger events. In acoustically challenging venues, it can help you distribute sound more uniformly, improve speech intelligibility all the way to the back rows, achieve high-quality audio, and reduce the volume of the main PA up front by the stage. All you need to do to sync POLAR up with the main PA is enter the distance between POLAR and the stage in meters.

3.3 Managing Presets

Load Preset

Five memory slots (U1 to U5) are available for storing your personal DSP settings. "U" stands for user preset. A user preset contains the settings for all parameters in the DSP menu (mode, three-band EQ, delay, display brightness, etc.).
Turn the Master knob to select the preset you wish to load from U1 through U5, and then press the knob to load the selected preset. "Exit" quits the menu without loading a preset.

Store Preset

This option stores the current DSP menu settings. Turn the Master knob to select the desired memory slot from U1 through U5. Confirm your selection by pressing the Master knob. A box serving to name this preset appears in the display. "Exit" quits the menu without saving a preset.

Text Editor: Turn the Master knob to access the text box and navigate the menu to the Save, Clear and Cancel options. Once you have dialed up the text box, press the knob to select the first of the twelve character spaces, and then turn it to select a letter or character. Press the knob again to move to the next character space, and then turn it to select the next letter or character. Press the Master knob twice – without turning it – to exit the text box. The enter symbol, an arrow, will appear in the display. Now you can turn the knob to navigate from the text box to the Save, Clear and Cancel options.

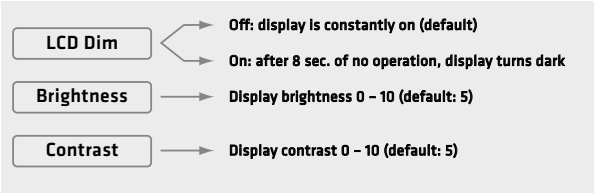
Save: Selecting Save lets you store the preset by pressing the Master knob. This takes you back to the U1 to U5 selection menu, where you can copy the preset to another memory slot or quit the menu via Exit.

Clear: Selecting Clear lets you wipe the Text box clean by pressing the Master knob so you can enter a new name.

Cancel: Selecting Cancel lets you stop the naming process by pressing the Master knob. This takes you back to the U1 to U5 selection menu, where you can select a different memory slot or cancel the entire saving process via "Exit".

Erase Preset
This option serves to delete the selected preset. Pressing the Master knob does not yet erase the preset. A confirmation prompt appears first:
Confirm Erase: Yes/No
Turn the knob to select Yes or No, and then press the Master knob to confirm your selection. Yes irrevocably deletes the preset; No takes you back to the DSP menu.

3.4 Display



LCD Dim: Deactivate (Off) this function if you want the display to remain bright. Activate it (On), and the display will dim eight seconds after you last used the Master knob. The readout darkens, but it will remain clearly legible. As soon as you use the Master knob, the display will brighten to the set level.

Bright: Adjusts the display's brightness from 0 to 10.

Contrast: Adjusts the display's contrast from 0 to 10.

3.5 Factory Reset

Reset
- "Reset" lets you restore POLAR's factory DSP settings.
- Pressing the Master knob does not yet trigger a reset. A security prompt appears first:

Confirm Reset: Yes/No
Turn the knob to select Yes or No, and then press the Master knob to confirm your selection. Yes irrevocably resets all DSP functions to the factory defaults, with Music mode activated, the Bluetooth connection severed, and all five user presets erased.

Good to know: **This function comes in handy if you frequently rent the system out. It lets you quickly restore the factory settings before handing the system over to the next customer.**

3.6 Exit DSP Menu

This menu option lets you quit the DSP menu and restore the Master knob to its function as a volume control. This also happens automatically if you leave the Master knob to idle for eight seconds.

4 Bluetooth

Pairing a Bluetooth device
- Press the Master knob once to access the "Bluetooth" menu.
- Press it again to start the pairing process.
- The Bluetooth icon in the display flashes slowly and "POLAR" can be found in the Bluetooth list of the Bluetooth-enabled device for 120 seconds.
- Select "HK Audio POLAR" on the Bluetooth-enabled device to pair it with POLAR.

The Bluetooth symbol lights up continuously in the POLAR display as soon as the two are properly connected. Read section 3.1 to learn more about the Bluetooth status indicator in the display.

Automatic Pairing
When you switch POLAR back on again, it automatically searches for the most recently connected device for 120 seconds. Once it finds that device, POLAR connects to it so you do not have to dial up and launch Bluetooth Pairing manually. If the device fails to connect after 120 seconds, you can either trigger an automatic search again by switching POLAR off and back on again, or launch the search manually by activating Bluetooth Pairing.

Switching Bluetooth Devices
You cannot switch to another device while a Bluetooth device is paired or POLAR is searching for the most recently connected device. You will have to dial up and launch Bluetooth Pairing manually to disconnect the currently paired device and connect another Bluetooth device.

Heads up: Bluetooth Pairing always triggers a new attempt to pair a Bluetooth-enabled device and disconnects the current Bluetooth connection.

Range
POLAR supports Bluetooth 5. Bluetooth 5-enabled devices' range can extend up to 40 meters. Devices that do not support Bluetooth 5 typically run up to 10 meters, but that depends on factors such as the given device's quality, transmission power and current environment. For example, walls obstructing the transmission path or a protective cover on the Bluetooth device impede radio communication. The sound drops out if the device moves out of range or behind walls that interfere with the signal. In this case, the Bluetooth icon in the POLAR display will flash quickly.

The connection re-establishes automatically if you bring the Bluetooth device back in range within 120 seconds, and the Bluetooth icon in the POLAR display will light up continuously.

Bluetooth Audio Stream Stutters or Drops Out
A cable is less susceptible to interference than Bluetooth, which has to send a constant stream of audio data via a radio frequency.
To get a clear signal without dropouts, it is best to align POLAR and the source device in line of sight of one another.

Good to know: **Your source device may be set up to issue ringtones, notifications and system sounds. The speakers will render these sounds along with the audio stream if they arrive via Bluetooth, so be sure to disable these functions on your Bluetooth device.**

Visit www.bluetooth.org to learn more.

5 Technical Specifications

POLAR 10 System	
Max. SPL peak calculated	126 dB half space
Frequency response +/- 10 dB	38 Hz – 20 kHz
Power amp output	2000 W
Amp type	Class D – biamped
Crossover frequency	180 Hz, 24 dB/oct.
Active protective circuits	Under-voltage, Thermal, Short Circuit, Over-current Protection; Peak, RMS Limiter
Inputs	2x Balanced XLR/ 1/4" (6.3 mm) combo jack, 1x Hi-Z instrument jack, 2x RCA/Cinch, Bluetooth audio stream
Outputs	Mix Out
Max. input level	+4 dBu
Modes (Filter presets)	Music, Voice, DJ
User presets	5
EQ	3-band, semi-parametric mid EQ
System delay	up to 291 ms (100 m)
Bluetooth	5.0
Housing	Birch multiplex / ABS
Finish	Black 2-component lacquer
Overall system height	213 cm
Weight	26.9 kg / 59.3 lbs

POLAR 10 Subwoofer	
Bass woofer	1x 10", 2" voice coil
Front grille	1.5 mm metal grille backed with black acoustic foam
Dimensions (WxHxD)	36.6 x 62.5 x 54.1 cm
Weight	21 kg / 46.2 lbs

POLAR 10 Mid/High Unit	
Mid speaker	6x 3", 3/4" voice coil, neodymium
HF driver	1x 1", 1" voice coil
Horn directivity	120° x 30°
Front grille	1 mm metal grille backed with black acoustic foam
Dimensions (WxHxD)	10.8 x 82.5 x 9.8 cm
Weight	3.9 kg / 8.6 lbs

POLAR 10 Spacer	
Front grille	1 mm metal grille backed with black acoustic foam
Dimensions (WxHxD)	10.8 x 82.5 x 9.8 cm
Weight	2 kg / 4.4 lbs

General Technical Specifications	
Current consumption pursuant to EN 62368-1	0.6 A / 220-240 V AC 0.8 A / 100-120V AC

For the USA:
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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter meets both portable and mobile limits as demonstrated in the RF Exposure Analysis. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

For Canada:
This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.