

*Beam steering  
line arrays*

# **ABT-BS140**

# **ABT-BS220**



EN

**Instruction Manual**



ver. 02.2022

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## 1. Safety



### **Danger!**

**High risk:** This symbol indicates an imminently hazardous situation such as "Dangerous Voltage" inside the product. If not avoided, this will result in an electrical shock, serious bodily injury, or death.



### **Warning!**

**Medium risk:** Indicates a potentially hazardous situation. If not avoided, this could result in minor or moderate bodily injury.



### **Caution!**

**Low risk:** Indicates a potentially hazardous situation. If not avoided, this could result in property damage or risk of damage to the unit.

1. **Read these instructions.** All the safety and operating instructions should be read before the apparatus or system is operated.
2. **Keep these instructions.** The important safety instructions and operating instructions should be retained for future reference.
3. **Heed all warnings.** All warnings on the apparatus and in the operating instructions should be adhered to.
4. **Follow all instructions.** All instructions for installation or use/operating should be followed.
5. **Do not use this apparatus near water.** Do not use this apparatus near water or a moist environment – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.
6. **Clean only with dry cloth.** Unplug the apparatus from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.
7. **Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.** Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the apparatus and to protect it from overheating. These openings must not be blocked or covered. This apparatus should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
8. **Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat or in direct sunlight.**
9. **No naked flame sources, such as lighted candles, should be placed on the apparatus.**
10. **Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where they exit from the apparatus.**
11. **Only use attachments/accessories specified by the manufacturer.** Any mounting of the apparatus should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
12. **Unplug this apparatus during lighting storms or when unused for long periods of time.** Not applicable when special functions are to be maintained, such as evacuation systems.
13. **Refer all servicing to qualified service personnel.** Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, does not operate normally, or has been dropped.
14. **Avoid mechanical shocks.** Strong impacts and shocks may damage the device. Transport the device carefully and avoid dropping it.

15. **Professional installation only.** Do not use this equipment in residential applications.
16. **Condensation.** In order to avoid condensation; wait a few hours before turning on the equipment when it is transported from a cold to a warm space.
17. **Hearing damage.** For apparatus with audio output, to prevent possible hearing damage, do not listen at high volume levels for long periods.
18. **Do not disassemble the device or attempt to repair or modify it.** The device does not include user replaceable components inside the chassis. Opening the chassis and unauthorized repairs will void the warranty. Unauthorized substitutions may result in fire, electric shock or other hazards.
19. **Safety check.** Upon completion of any service or repairs to this apparatus, ask the service technician to perform safety checks to determine that the apparatus is in proper operating condition.



**Danger!**

Overloading – do not overload outlets and extension cords as this can result in a risk of fire or electric shock.

20. **Power sources.** This apparatus should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For apparatuses intended to operate from battery power, or other sources, refer to the operating instructions.
21. **Power lines.** An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.



**Danger!**

**Object and Liquid entry** – never push objects of any kind into this apparatus through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the apparatus.

22. **Protective grounding.** An apparatus with class I construction shall be connected to a power outlet socket with a protective grounding connection.

**Protective earthing.** An apparatus with class I construction shall be connected to a mains socket outlet with a protective earthing connection.

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**Note for power connections**

- » For permanently connected equipment, a readily operable mains plug or all-pole mains switch shall be external to the equipment and in accordance with all applicable installation rules.
- » For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.



**CAUTION**  
RISK OF ELECTRICAL SHOCK  
DO NOT OPEN



**This label may appear on the bottom of the apparatus due to space limitations.**



**Caution!**

To reduce the risk of electrical shock, DO NOT open covers. Refer servicing to qualified service personnel only.



**Warning!**

To prevent fire or shock hazard, do not expose units to rain or moisture.



**Warning!**

Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.



**Warning!**

**Power disconnect:** If the apparatus is mains powered and a power supply cord set is provided, the disconnect device is the mains plug of the power cord set.

If an AC DC adapter is provided and the mains plug that is part of the direct plug in device, the AC DC adapter is the disconnect device. The socket outlet shall be near the apparatus and shall be easily accessible.



**Old electrical and electronic appliances**

Electrical or electronic devices that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Waste Electrical and Electronic Equipment Directive).

To dispose of old electrical or electronic devices, you should use the return and collection systems put in place in the country concerned.



**Only used at altitude not exceeding 2000 m.**



**Only used in non-tropical climate regions.**

## 2. Appearance of the product



Image 1. Beam steering line arrays: ABT-BS140, ABT-BS220

### 3. Technical Specifications

| Model                                                        | ABT-BS140                                              | ABT-BS220             |
|--------------------------------------------------------------|--------------------------------------------------------|-----------------------|
| Electrical                                                   |                                                        |                       |
| Rated power, W                                               | 140                                                    | 220                   |
| Effective frequency range, Hz                                | 130 - 20 000                                           | 120 - 20 000          |
| Loudspeakers                                                 | 9 x 3,3"                                               | 15 x 3,3"             |
| Dome tweeters                                                | 3 x 1"                                                 | 4 x 1"                |
| DSP channel                                                  | 8                                                      | 16                    |
| Class D power amplifier                                      | 8 x 20 W                                               | 16 x 20 W             |
| SPL @ 1 m, rated power, dB                                   | 113                                                    | 119                   |
| SPL @ 4 m, rated power, dB                                   | 101                                                    | 107                   |
| Max SPL , rated power, dB                                    | 95 @ 15m                                               | 95 @ 25m              |
| Horizontal dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°] | 360 / 180 / 140 / 110                                  | 360 / 180 / 140 / 100 |
| Vertical dispersion, [°]                                     | 6 ÷ 14                                                 | 6 ÷ 14                |
| DSP                                                          | Limiter, noise gate, 10-band parametric EQ, delay line |                       |
| Audio inputs                                                 |                                                        |                       |
| Line input level [dB]                                        | 0                                                      |                       |
| 100V input level [dB]                                        | 50                                                     |                       |
| Line input impedance [kΩ]                                    | 15                                                     |                       |
| 100V input impedance [kΩ]                                    | 40                                                     |                       |
| Power supply                                                 |                                                        |                       |
| Power supply, V AC                                           | 230                                                    |                       |
| Power consumption, W                                         | 15 ÷ 160                                               | 30 ÷ 280              |
| Mechanical                                                   |                                                        |                       |
| Dimensions, H x W x D, mm                                    | 900 x 95 x 113                                         | 1450 x 95 x 113       |
| Net weight, kg                                               | 4,6                                                    | 5,8                   |
| Color                                                        | White (RAL 9016)                                       |                       |
| Material                                                     | Aluminium                                              |                       |
| Options                                                      |                                                        |                       |
| Optional colors                                              | RAL Palette                                            |                       |

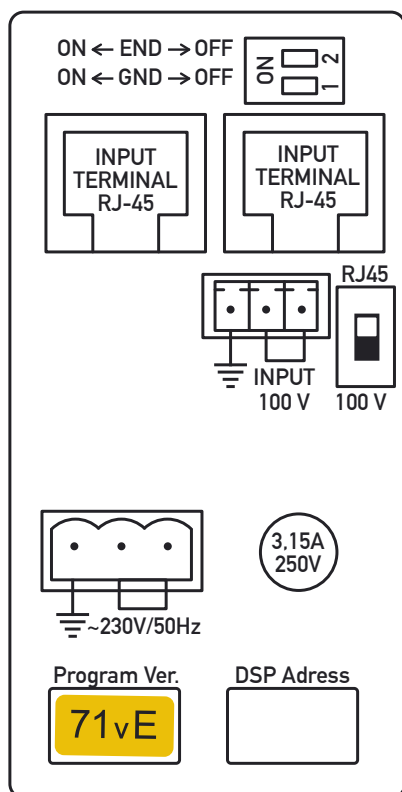
## 4. Installation Instruction

ABT-BS140 and ABT-BS220 are digitally controlled beam steering line arrays that the directional and frequency characteristics can be adapted to the prevailing acoustic conditions thanks to the use of DSP processors and dedicated BS Selector programming.

There is possible to connect up to 32 columns to one DSP interface - ABT-BS INT. The maximum distance of the last column from the ABT-BS INT interface is 1500 m. Connect the columns to the interface and between them with the FTP Cat5e cable. The DSP ABT-BS INT interface should be connected to the PC with a USB A - USB B cable.

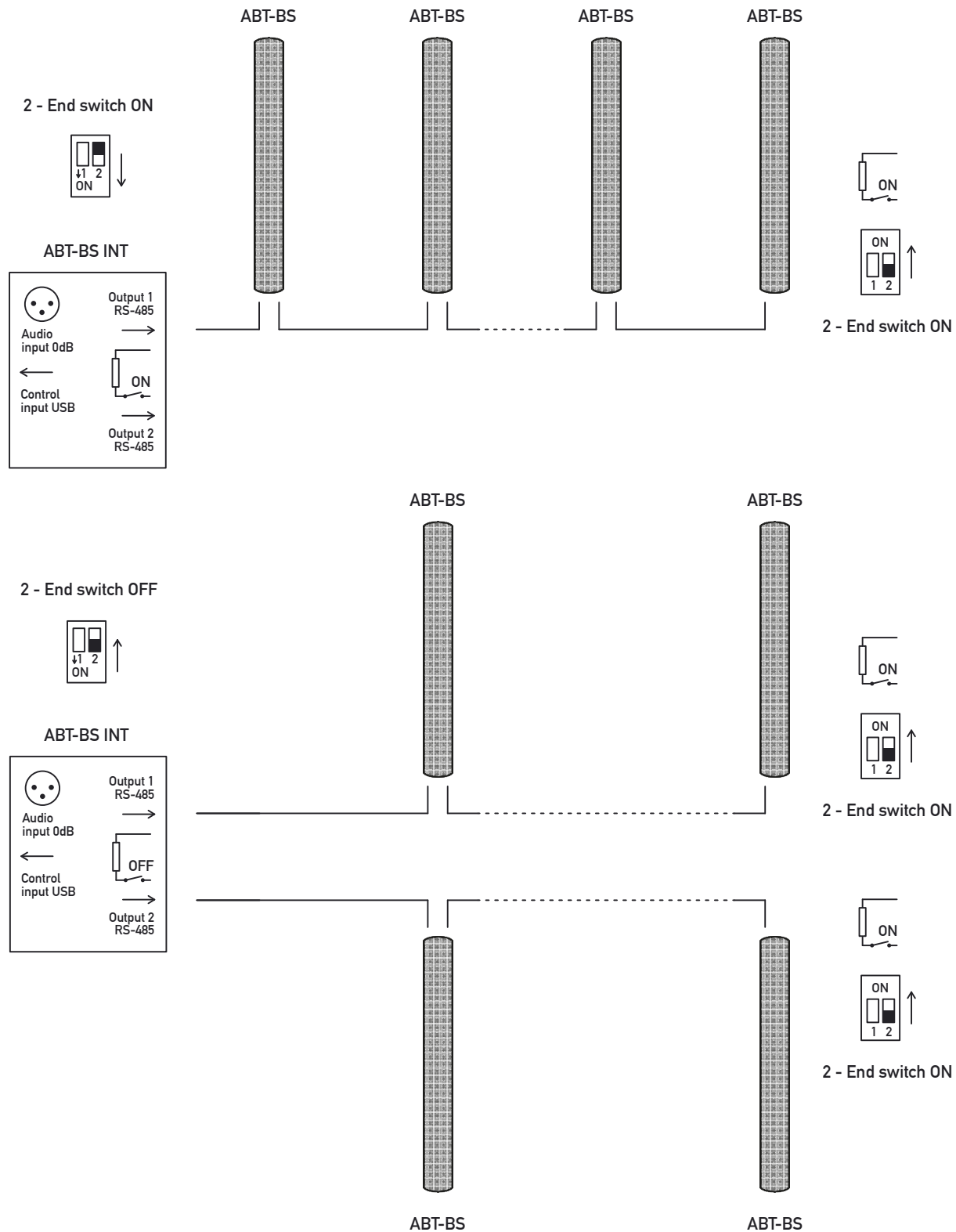
### 4.1 Connecting the loudspeaker to the 230 VAC mains supply using the phoenix connector located on the back of the housing, in the area of the connection panel

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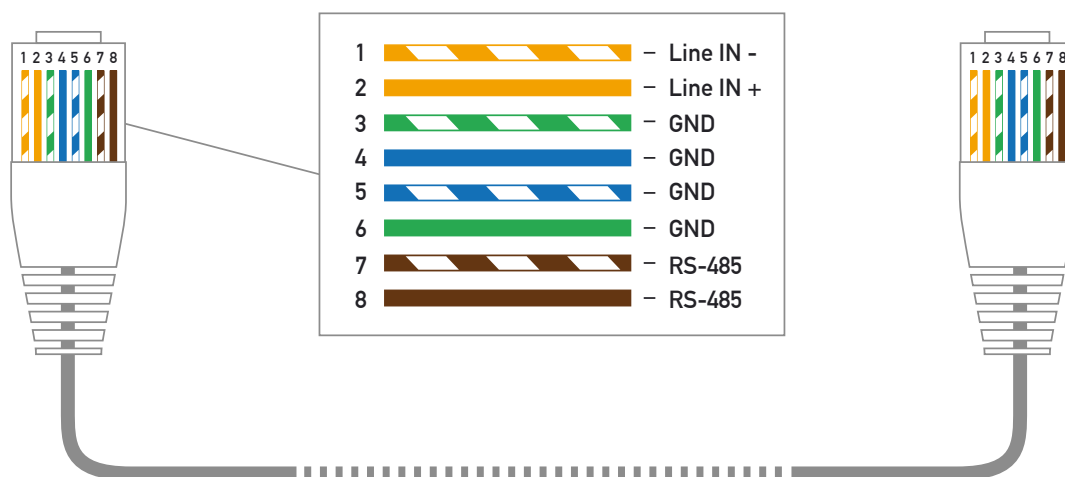


1. Set the switch 1 to the "ON" position to enable or "OFF" to disable the signal ground, depending on the system configuration.
2. Set the switch 2 in the last column on the loudspeaker line to the "ON" position to turn on the terminating resistor. In the remaining loudspeakers on the loudspeaker line, the switch should be in the "OFF" position.
3. Set the RJ45 - 100V switch depending on the type of signal supplied to the loudspeakers
  - » RJ45 - 0 dBu
  - » 100V - signal 100V +50 dBu

## 4.2 System connection



1. Connect the system according to the above diagram, connecting one or two transmission lines. When connecting only one line, set the terminating resistor in ABT-BS INT to the "ON" position, and when connecting two lines to the "OFF" position.
2. Connect the signal cable depending on type of connection:
  - » 0dBu to the INPUT TERMINAL RJ45 socket, connect the next column on the loudspeaker line to the second INPUT TERMINAL RJ45 socket
  - » 100V to INPUT 100V socket
3. Use FTP Cat5e cable to connect the ABT-BS INT interface to the loudspeaker and between them.
4. Use the USB A - USB B cable to connect the PC to the ABT-BS INT interface.
5. Connect the 0 dBu audio signal to the XLR socket of the ABT-BS INT interface.



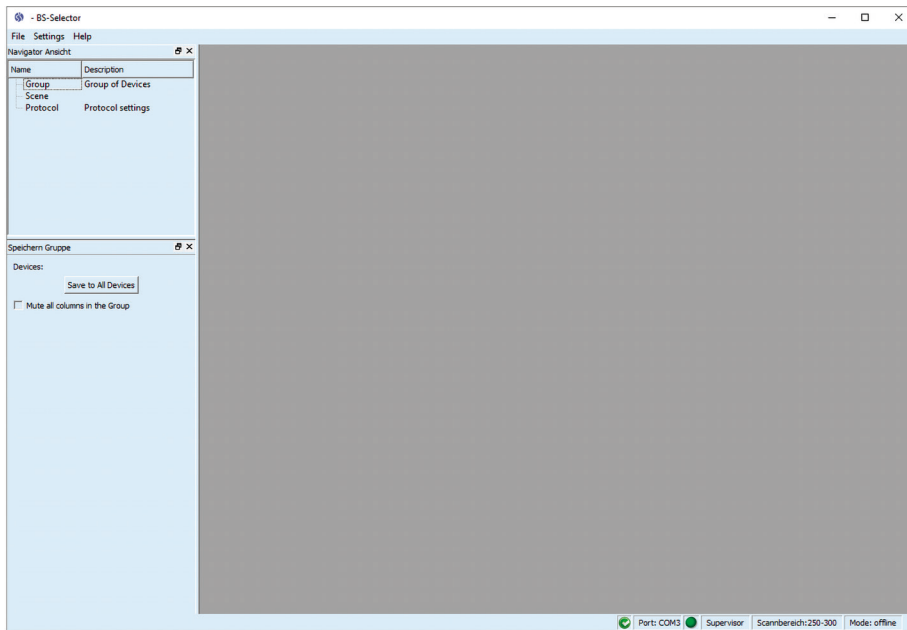
### **4.3 Installing the loudspeaker using dedicated mounting brackets**

1. Mount the column parallel to the wall, without tilting it, using dedicated mounting brackets.
2. Recommended mounting height is 1.9 m and it is determined by the reference line on the rear of the loudspeaker housing (Acoustic reference line).

## 5. *BS Selector*

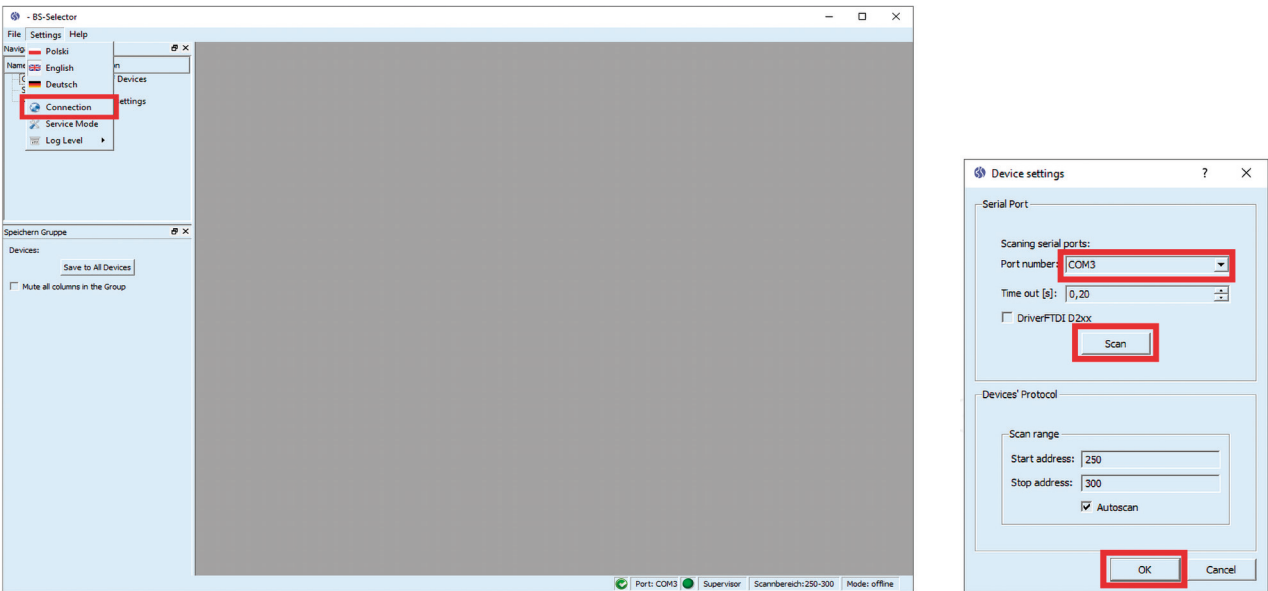
**BS Selector** is a digitally controlled line column management software that allows you to search devices and configure them.

**Download the software from the website:** <https://ambientsystem.eu/en/BSselector> and run **BSselector-x.x.x.exe**.



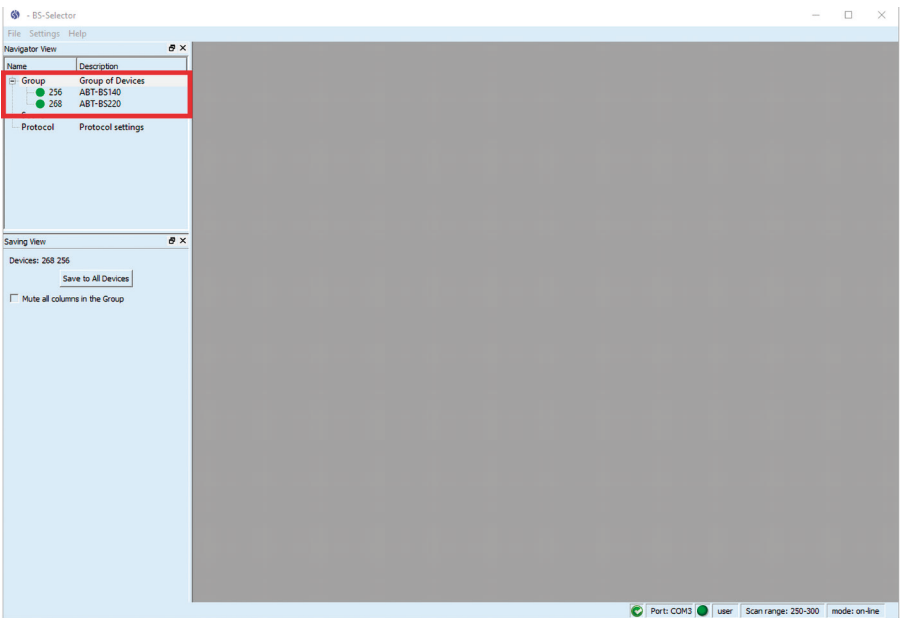
## 5.1 Searching local devices

Run BS Selector. In the „Settings“ menu, select „Connect“ and then „Scan“. Select the number of the virtual COM port to which the ABT-BS INT interface is connected. Select „OK“ to start scanning.



## 5.2 Devices

The available devices are visible in the left part of the window in the „Group“ menu. Double-click the selected loudspeaker to go to the settings.

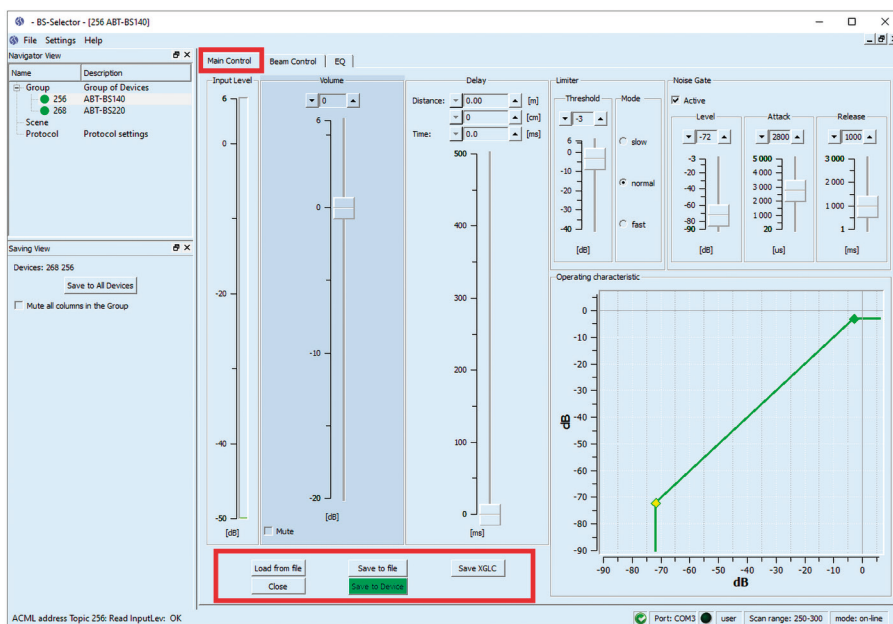


## 5.3 Main Control

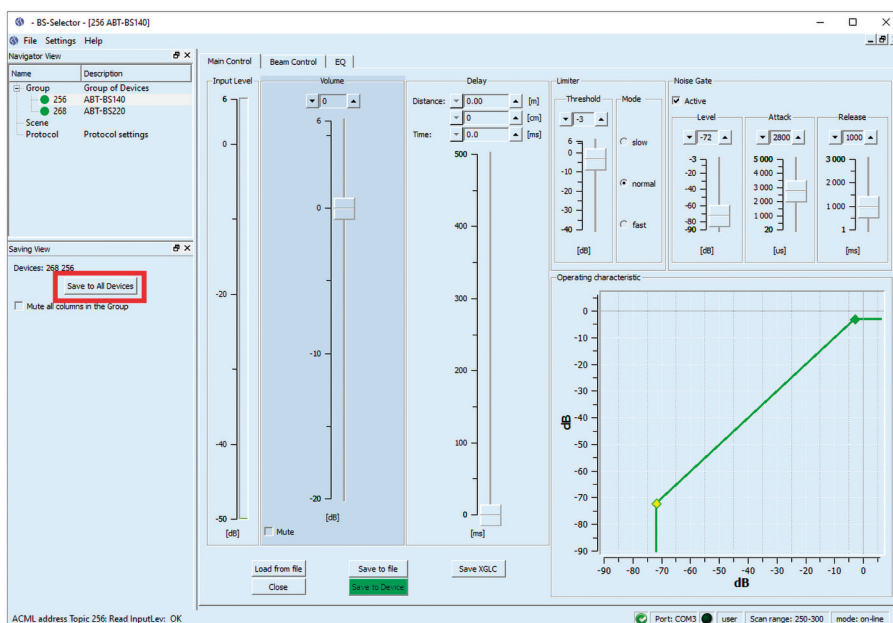
The following settings are available in the „Main Control“ menu:

- » „Input Level“
- » „Volume“
- » „Delay“
- » „Limiter“
- » „Noise gate“

Saving the settings to devices, from and to a file is available in the menu at the bottom of the window. „XGLC Export“ allows you to export the settings to a \*.xglc file and load them into EASE.



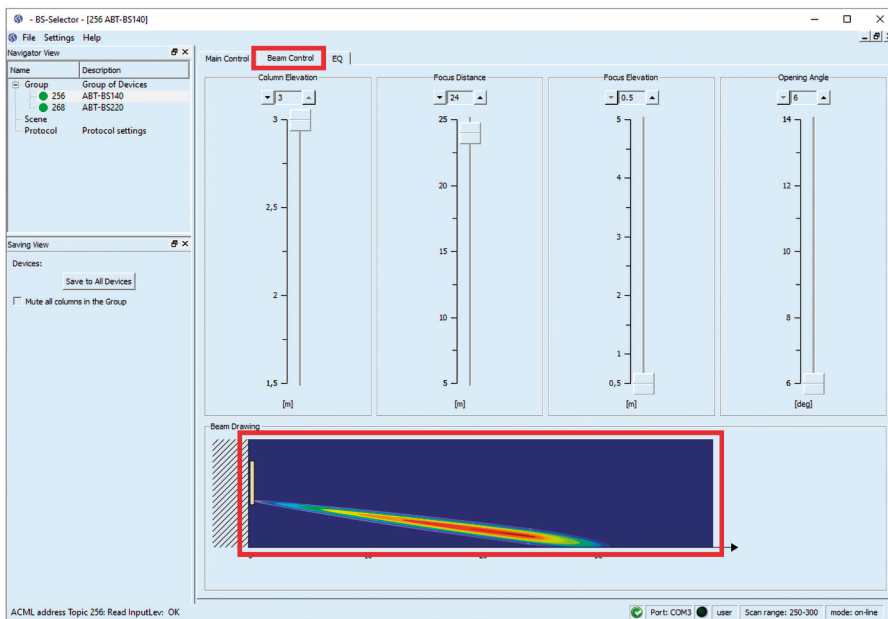
To send the settings to all devices, select „Save to All Devices“ from the menu in the left part of the window.



## 5.4 Beam Control

The following settings are available in the „Beam Control“ menu:

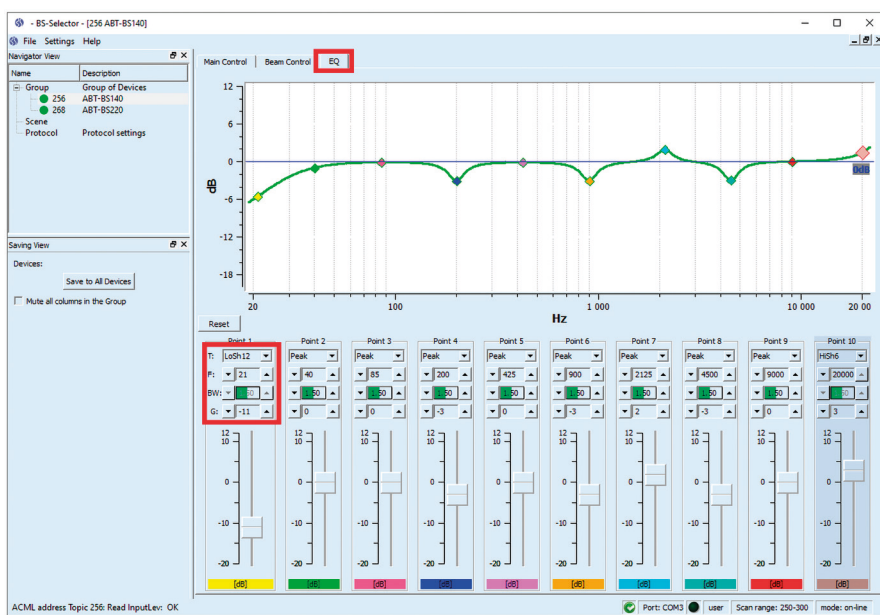
- » „Column Elevation“
- » „Focus Distance“
- » „Focus Elevation“
- » „Opening Angle“
- » „Beam Drawing“ - visualizes the selected settings



## 5.5 EQ

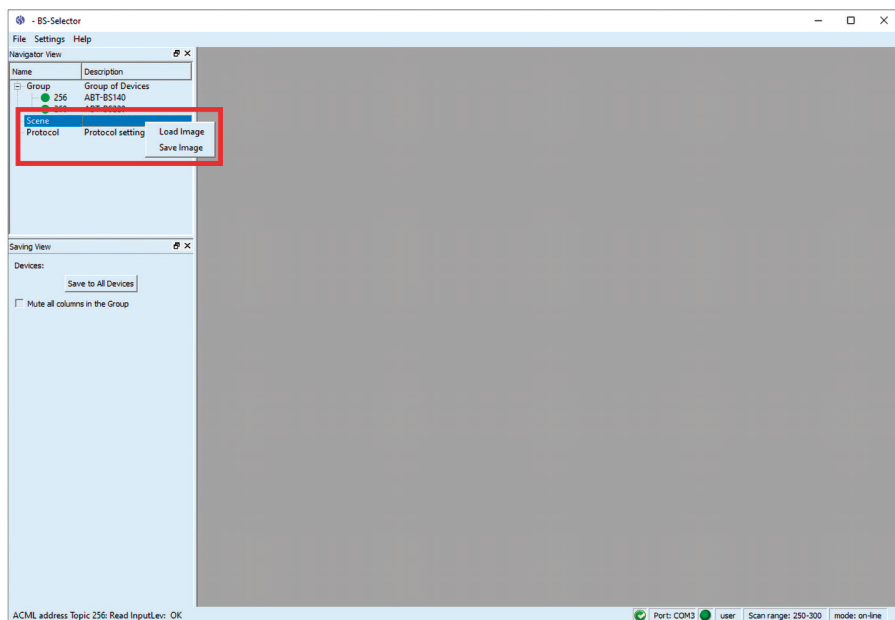
There is a 10-point parametric equalizer in the „EQ“ equalizer settings menu:

- » „T:“ type of filter
- » „F:“ frequency
- » „BW:“ bandwidth
- » „G:“ gain

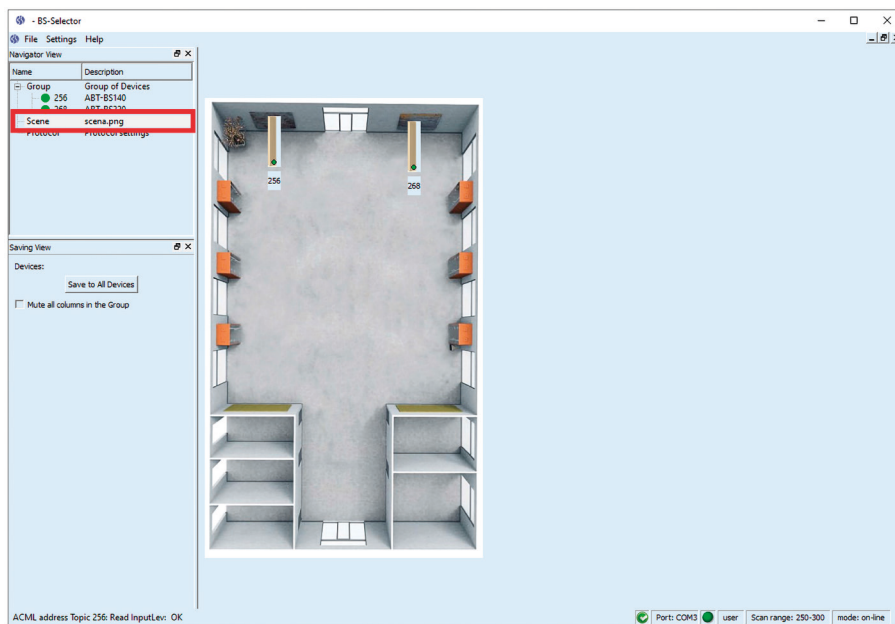


## 5.6 Scene

In the “Scene” menu, it is possible to load graphics, eg a view of the room, in order to visualize the system layout. To add a graphic, right-click the “Scene” menu in the left part of the window and select “Load Image” or “Save Image” to save.



Double-click on „Scene” to display the view, and place the icons of each column in the graphic. Double-click the icon of the selected loudspeaker to go to its settings.



## 5.7 Project

The scene with the settings for the group of ABT-BS loudspeakers can be saved as a project. To save the project, select the „File” menu and then „Save”.

To open a previously saved project, select the „File” menu and then „Open”.



## 5.8 Offline project

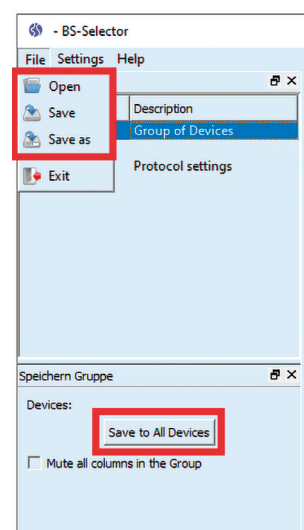
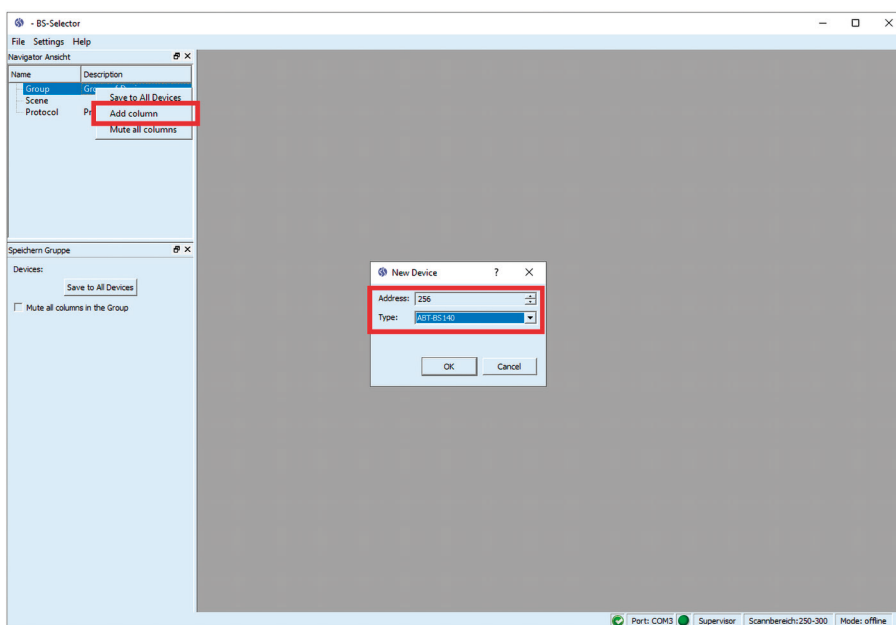
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BS Selector allows you to create an offline project, add scenes, and add, and preconfigure devices. To add a device, right click on the **"Group"** menu in the left part of the window and select **"Add column"**. Then select **"Address"**: and **"Type"** of the device.

To configure, double click on the added column and go to the settings menu.

To add a scene, right-click the **"Scene"** menu in the left part of the window and select **"Load Image"** or **"Save Image"** to save. Double-click on **"Scene"** to display the view, then arrange the icons of each column in the graphic. Double-click the icon of the selected column to go to its settings. To save a project, select the **"File"** menu and then **"Save As"**.

After completing the installation on the site and detecting all devices online, it is possible to save the settings from the previously prepared project in the devices. To open a previously saved project, select the **"File"** menu and then **"Open"**. To send the settings to all devices, select **"Save to All devices"** from the menu in the left part of the window.







*We make everyday life safer*

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**Ambient System Sp. z o.o.**

ul. Bysewska 27 | 80-298 Gdańsk

T: +48 58 345 51 95 | [ambient@ambientsystem.pl](mailto:ambient@ambientsystem.pl)