BR218

Professional Sound Reinforcement Loudspeaker System

Operation Instructions

DAL Acoustics loudspeaker systems are designed and manufactured in Germany by German Audio Engineering GmbH. German Audio Engineering works exclusively with upstream suppliers who can guarantee consistent and verifiable quality of their components and parts.
If you have a problem with one of our products, or if you need a spare part, please contact your local distributor or contact us directly.
Thank you for choosing a DAL Acoustics product.

System description:

The BR218 systems is an active driven Sub/Low woofer system in a ported cabinet made of waterproof glued plywood with fine textured varnish coating. The systems is loaded by 2 of 18” long excursion cone transducer with 4” voice coils and a symmetric Low Velocity tuning port. The BR218 provides an (omni-) spherical radiation pattern and works band-limited by an external control system from 38Hz to 100Hz. The system offers a peak power handling of >3000W.

The system has integrated 8 transport handles, 1 M20 threaded plate and is protected by a robust protective grill made from 2mm steel and foam backing. In stand-alone or spaced array operation, it will complete your main systems with sufficient low end. The BR218 can also be used in different complex operation modes like cardioid deployments, “endfired-arrays” or stacked lines.
When operated with the DAL Control & Drive System, the system is optimal parameterized for sonic quality and protected for maximum continuous and peak sound pressure level. The DAL Control & Drive Systems provides different settings for the operation of BR218 combinations.

With a gross volume of <450l the BR218 is one of the smallest high output double 18” sub/low systems with a tuning down to 38Hz.

BR218 accessories and options

Blue Wheels (no stop)

No Blue Wheels

Front mounted Protection Board incl. fixing belts

Textile Hood (waterproof)

Notes on the operating instructions:

Observe the explanations and notes in these operating instructions. If you lend or pass on this product to third parties, please refer to this operating manual, pass on this operating manual.

This symbol in connection with the signal word "Beware" indicates a possibly dangerous situation. Failure to observe this safety instruction may result in serious injury or even death.

This symbol in connection with the signal word "Warning" indicates a possibly dangerous situation for persons with pacemakers. Non-observance can lead to serious injuries or even death.

This symbol in connection with the signal word "Caution" indicates a possibly dangerous situation with a high ambient noise level. It is recommended to wear hearing protection in case of high noise level.

This symbol in conjunction with the signal word "Caution" indicates a warning of a magnetic field present in the immediate vicinity of the object.

This symbol in connection with the signal word "Warning" indicates commands to observe product-relevant operating conditions.

General information

Operating instructions DAL BR218
The information in this operating manual is given to the best of our knowledge and is valid at the time of printing. We reserve the right to change specifications of the product at any time. German Audio Engineering does not guarantee the quality or suitability for use. German Audio Engineering GmbH (for DAL) assumes no liability for direct or indirect damage or consequential damage resulting from the use and operation of this product.
German Audio Engineering reserves the right to continuously develop the product further and to make changes to the product as a result. German Audio Engineering is always pleased to receive suggestions for improvement and comments on the product.

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Intended use and application, safety and operational reliability

Observe the following safety instructions when operating loudspeakers to avoid risks. The BR218 loudspeaker has been designed exclusively for professional use in sound reinforcement systems. The loudspeaker may only be used by instructed and qualified persons. Observe the operating modes described in these operating instructions. Other uses are not permitted.
The BR218 canbe operated without the DAL Control & Drive System DS-4L, but then it does not offer the performance data specified by us and will not have the same power handling capacity.

The Minimum operation parameters to adjust your external control system are specified in this manual.

In operation avoid Feedback, distorted signals (clipping), peaks resulting from plugging or unplugging devices in the signal chain, long term pure sine wave tones with high power and too weak power amplifiers not specified by their power ratings. Such signals and devices can cause loudspeaker overload or damages and are not covered by our warranty-

Safety instructions:

Warning

Loudspeakers have a permanent magnetic field. Persons with pacemakers must not be in the immediate vicinity of loudspeakers, as magnetic fields can lead to interference with pacemakers. When repairing loudspeakers, it must be ruled out that the magnetic components come into contact with persons wearing pacemakers.

Warning

Warning

Loudspeakers have a permanent magnetic field. This can interfere with the operation of other components in the immediate vicinity that are magnetically sensitive.

Caution

Beware

The BR218 loudspeakers must be secured against slipping or falling over, e. g. with suitable tension straps on stages. A falling loudspeaker can cause great damage to property and personal injury. Use only material specified by DAL for the installation and mounting of DAL loudspeakers. This work must be carried out by qualified personnel. Observe the applicable safety regulations when doing so.

Beware

Caution

Do not stand in the immediate vicinity of loudspeaker systems that are operated at high sound pressure levels. Wear hearing protection when testing and setting up speaker systems. These speaker systems - operated at high sound pressure levels - can endanger health. Even seemingly low sound pressure levels of 90dB/SPL can cause long-term impairment or damage to hearing.

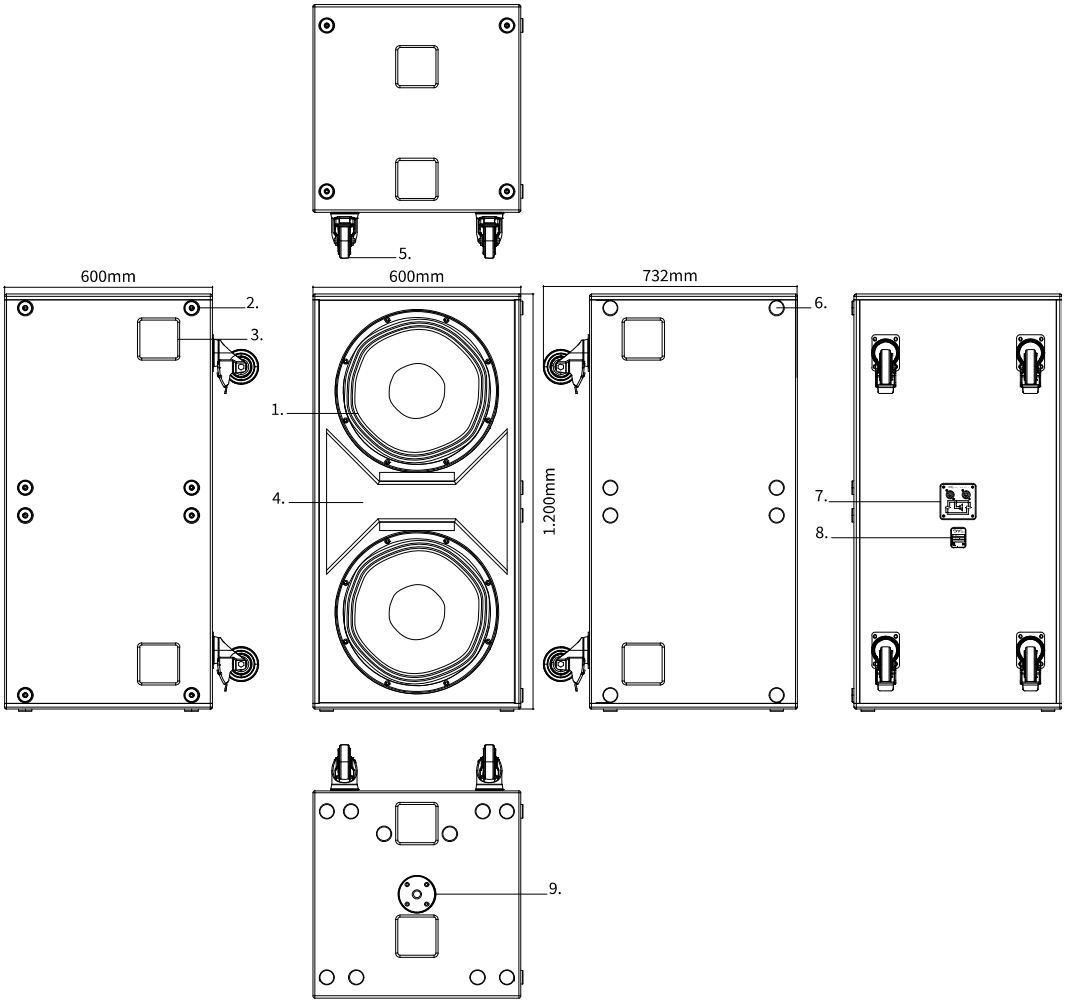
Caution

Attention

Attention

When setting up, storing and transporting loudspeakers, ensure that excessive environmental influences such as direct sunlight, moisture, vibrations and dust have no effect. When operating the loudspeakers, avoid feedback, distorted signal transmission and playback as well as signal peaks that can be caused by switching devices in the signal chain on and off or disconnecting them from the signal chain during operation. Make sure that the loudspeaker is not exposed to permanent thermal overloads, which may cause fire and result in damage to property and personal injury. DAL will not be liable for any damage caused in this way and will not accept any warranty or liability for consequential damage.

Technical Overview



(1.) 1 of 2 x 18“ NDym long excurcion cone transducers: DAL Replacement cone transducer DAL 18T01-30-100B, DAL 18W360B Order Code 85840108

(2.) 1 of 12 abrasion-resistant feet, Order Code 93110000

(3.) Transport handles (8)

(4.) Symmetric LV Tuning Vent

(5.) Blue Wheels, Order Code 70010102 (break), 70010100 (no break)

(6.) Stacking Recess

(7.) Connector Panel (1+/1-) ; black, Order Code: 1000000002 Type DAL ASS-NL4-1sw. White, Order Code: 1000000003 Type DAL ASS-NL4-1ws

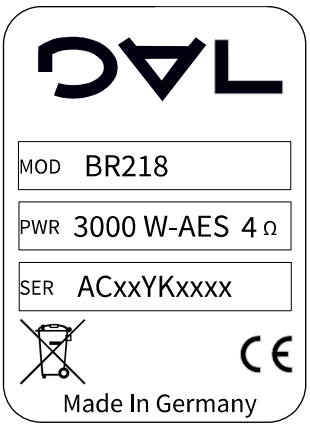
(8.) Manufacturer Plate with serial number

(9.) M20 threaded Pole Mount

(10.) Protective Front Grill with Foam Cover: Order Code: 1000520, Type DAL ASS-FGBR218)

Tools required for maintenance: Srewdriver and Bits: PH2, Allan Key 5mm

Purchase of spare parts



BR218– Manufacturer Plate With Serial Number

Please state the serial number of your product when ordering spare parts. The serial number identification of your product can be found on the serial number plate recessed in the rear wall of the loudspeaker system.
The illustration of the serial number plate is shown on the left. The S/N designation is followed by the serial number of the speaker system.

Technical Specifications

Acoustical Bandwidth with DAL DS-4L: 38Hz –100Hz

Dispersion BR218: 4π

Nominal Impedance (Re): 4Ohm

System Power: 3000W (AES), 6000W Peak

Continuous SPL: >130*dB/3000W/1m, Pink Noise Crest Factor 6dB

Peak SPL: > 136dB*/6000W/1m, Music Signal, with GAE DS-4L

* 4π measurements, ground stacked measured SPL Levels are +6dB higher

Dimensions (W x H x D mm): 600 x 1200 x 600; 600 x 1200 x 732 (w. wheels),

Net Weight: 86kg (no wheels)

Connectivity: 2 x Speakon™ NL4 1+/1-

Standard Coating: textured black varnish, optional PU coating

Recommended Control & Drive System: DAL DS-4L

For operation recall one of the following control setups for DAL DS-4L

BR218SM: Sub Mode – stand alone operation, spaced arrays
BR218SCM: Simple cardiod mode (2 Front, 1 Back)

Operation of BR218 and DAL Control & Drive Systems
DS-4L: 1 systems per channel

Technical Notes

DAL protective grilles with foam lamination are the mechanical protection component for the built-in transducers and offer a high acoustic transmission as well as their affixing minimizes sonic influences of the grilles. The backing or covering of the grilles with foam serves also as UV-light protection, dust protection and improves the optical unobtrusive of the systems. Only undamaged grilles and foams can fulfill these tasks. Replace warped grilles or worn-off foams to maintain their function.

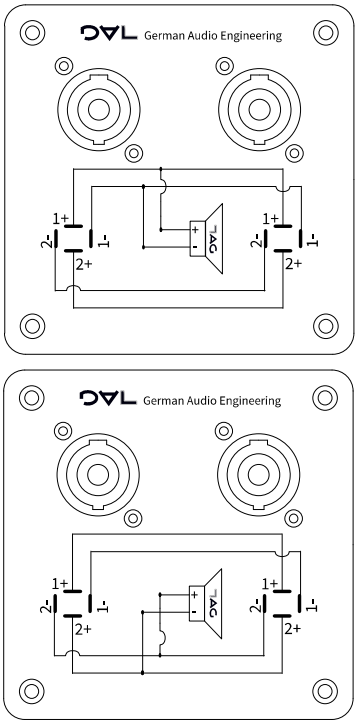
DAL loudspeaker systems with Polyurea-Coated or painted enclosures are basically suitable for temporary outdoor operation, even in the rain.

For indefinite operation outdoors as in fixed installations, the loudspeaker systems must be protected with a hood against direct sunlight and rain. If necessary, the loudspeaker should be equipped with the optional front grille with weather protection.

Most DAL loudspeaker systems can be supplied for extra charge from the factory in a weatherproof (WR) or sea-weatherproof (SWR) variant.

For indefinite operation outdoors in subtropical and tropical areas, the

loudspeaker should be ordered as the WR variant. For indefinite operation at sea and other areas with a humid and salty atmosphere, the loudspeaker should be ordered in the SWR equipment variant. Both variants are manufactured at the factory only.



BR218 NL4 connector panels

Connectivity And Electrical Operation

The BR218 is connected via 2 Speakon® NL4 sockets connected in parallel on the connector panel. The connectivity is 1+/1- for the low drivers.

Connectors Pin Assignment 1+/1-: The BR218 is wired in such a way that a positive voltage at 1+ moves the cones of the low frequency transducers outwards. Please see polarity check in chapter test and maintenance.

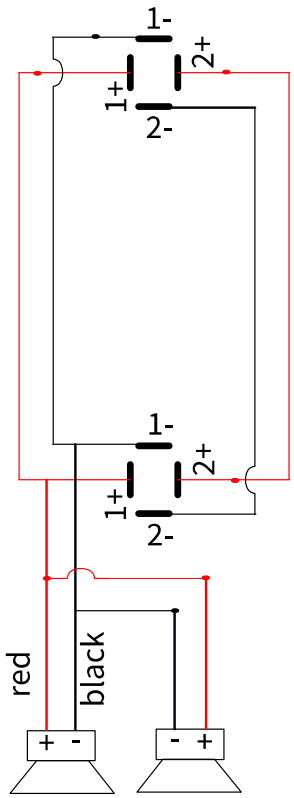
The BR218 can NOT be operated without a dedicated system controller. The controller must provide an adjustable low pass filters, active cross over function, adjustable delay and sufficient parametric EQ for each channel. Use the DAL Control & Drive Systems to ensure factory specification, maximum performance and sonic characteristics.

Keep in mind that you may need to increase the required cable cross-section for parallel operation of multiple BR218 on one amplifier channel. The same applies to long and longer cables between power amplifier and BR218**.** We recommend a minimum cross section of 2.5 qmm up to 10m cable length @8Ohm. Here the loss through the cable is approx. 5% of the amplifier power.

Installation And Rigging

The BR218 is designed for use and installation in ground stacked operation. Rigging and suspended installations are not intended. When setting up and positioning the system, make sure it is on a firm and leveled surface and that the selected load points have a proven load-bearing capacity. Use approved stands and approved mounting accessories that are designed for the weight load. Additionally secure the stability of the speaker system to prevent personal injury and property damage.

Test And Maintenance



BR218 - internal wiring schematic

Connector Panel

The wiring of the loudspeaker components inside the cabinet is according to the diagram to the left. With an impulse phase checker, which delivers a signal with non-inverted phase, a signal of positive polarity is obtained directly measured in front of the cone transducers.

Transducers

It is good practice to check loudspeaker systems frequently in concern of mechanical integrity and distortion free sound reproduction.

Here is a simple way to quickly check sound reproduction. Use a sine wave generator with sweep function or a tunable sine wave generator and a power amplifier. Adjust the test system to deliver an appropriate sound power level and tune the sine wave generator from low to high frequencies. Listen to the acoustic output the loudspeaker delivers. The signals should be free of audible distortions. Mechanical noise from the system or unwanted reproduction of side tones should be followed up by inspection and search for the root cause. Please note that for this test you can drive the Device under test also via an appropriate system cross over / controller in front of the power amplifier.

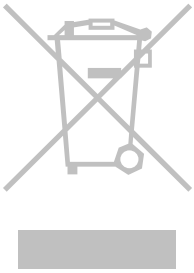
Fixing and mounting points should be inspected frequently.

Operation of DAL BR218

There is the need of active control for the BR218 plus a dedicated power amplifier delivering RMS 5000W@4Ohm.

Down below are the parameters to be adjusted for an external system controller. Please note that the parameter “Delay” should be measured on site with an FFT analyzer in relation to any Top stacks like GAE Director Pack or S12N-TM. Depending on the acoustic distance between BR218 and top stacks their relative acoustic distance must be compensated for best summation. Doing that correctly will give an optimum summation at the acoustic cross over frequency between BR218 top stacks e.g. Director Pack or S12N-TM.

BR218	Control Parameters		
Limiter	+43dBu		
Polarity	+		
Gain	0,0dB		
Delay	to be adjusted locally		
High Pass	30Hz	Butterworth 3rd Order	
Low Pass	90Hz	LinkwitzRiley 4th Order	
Boost at Tuning	38Hz	BW3,9Q	Gain +3dB



Note on disposal

Observe the applicable national regulations and rules for disposal.
All products manufactured by German Audio Engineering GmbH are B2B products and are supplied to commercial customers. The adjacent symbol of the crossed-out trash bin can indicate that this product will be disposed of exclusively by German Audio Engineering GmbH. For DAL products that do yet bear this marking, the owner is responsible for proper disposal.
Our registration according to Elektro G is: WEEE-Register-Nr. DE 72073104

Manufacturer's declaration

The declaration applies to: DAL BR218 1000532 and all model variants that correspond to the factory design and have not been modified by others.
Applied national standards and technical specifications:
DIN 18800, DIN 1055, DGUV regulation 17, BGI 810-13
Hamburg, 01.06.2018