



BNS

PROFESSIONAL



THE CONTROL ROOM PARTNERS

GENERAL

Designing a monitor loudspeaker is no absolute science. It is a blend of craft and knowledge. In the BNS Professional Monitors these features are combined in a breath-taking form. Seven years ago BNS joined forces with the NOB, the Netherlands Broadcasting Services Corporation, in developing professional monitors. It results nowadays in two highly successful monitors for use in small to medium-sized control rooms, and a sub-woofer to assist them.

The BNS monitors have built-in 4th order Linkwitz-Riley electronic cross-overs, power amplifiers directly connected to each chassis.

The BNS monitor cabinets are made of polyurethane which gives the possibility of an optimum shape. This shape contributes to minimal diffraction effects by virtue of the recessed edges. The high internal damping of the polyurethane cabinet gives a very low level of panel resonances.

BNS PROFESSIONAL A-4

NEAR FIELD MONITOR

CABINET

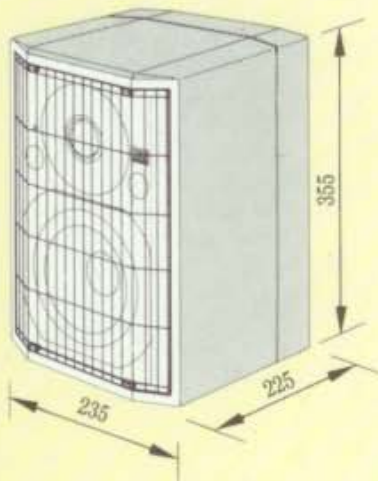
Like its big brother, the BNS A-3, the A-4 is also made of polyurethane. Its appearance is like the A-3 and due to its small size and easy placement it will be most welcome in commentary cells with limited space.

THE DRIVERS

The A-4 uses a 140 mm bass driver with a cone made of woven glassfibre. This driver is placed in a vented cabinet which is tuned at 65 Hz. The tweeter is a 25 mm dome with high damping losses. The voice coil is cooled with a magnetic fluid, the back of the dome is vented through the pole into a back chamber

INPUT AND CROSS-OVER CIRCUIT

The A-4 has a balanced transformerless input with an XLR connector. A second parallel connector is provided to form a daisy chain bus, so a large number of speakers can be linked up. The cross-over network is a 4th order Linkwitz-Riley type. This to prevent lobing and place dependent coloration. A switch is provided to compensate for the effect of flush mounting. The cross-over frequency is 2.8 kHz. An input level control (-14 dBm to +6 dBm) adapts the monitor to the output level of the mixing console.

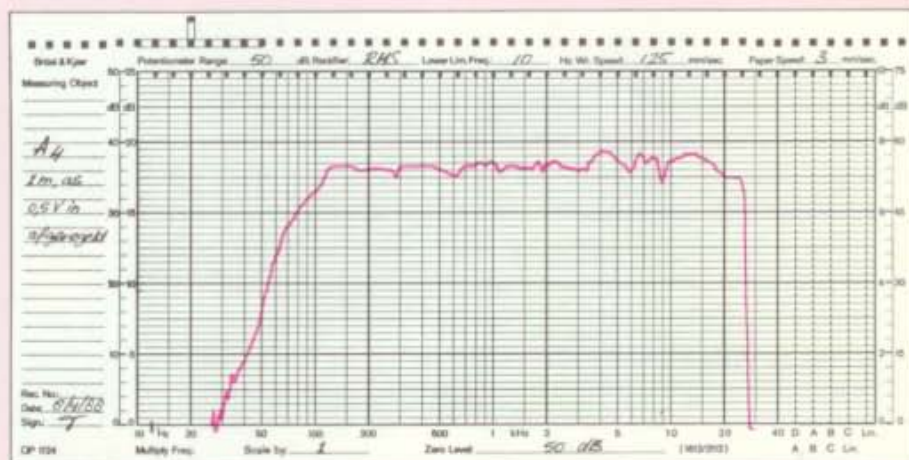


A-4 APPLICATIONS

- Commentary cells.
- Small O.B. vans.
- Video editing.
- Video monitoring.
- AV presentations.
- E-N-G. suites.

SYSTEM DESCRIPTION

The BNS A-4 is a small two way monitor designed for small rooms and near field applications. It includes its own active cross-over, input amplifier and power amplifiers. It is also suitable in the field because it can be powered by a 12 V DC battery. Its small size makes it the best choice for every application where there are space limitations. The A-4 also fits very well on the meterbridge of your mixing console.



Frequency response



BNS monitors for use in small to medium sized controlrooms
(photo: Omroep Brabant, local radiostation in the Netherlands).

AMPLIFIERS

The two built-in amplifiers deliver 20 W each. The continuous power of the treble amplifier is 6 W to protect the tweeter without limiting its output capacity on musical signals. The amplifiers are equipped with thermal protection, load protection and short circuit protection.

COMPLETE CONSTRUCTION

Maintenance of the monitors is straightforward and very easy due to its rugged and simple construction. The electronics are mounted at the back of the monitors on a heatsink. All monitors are individually tested in our anechoic room and are delivered with a test certificate.

TECHNICAL SPECIFICATIONS

Frequency range: 70 Hz-22 kHz \pm 2 dB.
 Max. sound press.: 97 dB /1m/1000 Hz
 Distortion: @ 95 dB > 100 Hz < 1.5%
 @ 95 dB > 70 Hz < 4%
 Colour: RAL 7011
 Cross-over frequency: 2,8 kHz
 AC power inlet with fuse and
 3-pin Euro Connector.
 Input imp.: 15 k Ω symmetrical.
 Input level: -14 dBm to + 6 dBm,
 for full output.
 Power consumption:
 220 V 50 Hz
 AC 8.4 VA no signal
 34.6 VA max. output
 12 V DC 0.2 A no signal
 1.2 A max. output
 Weight: 7 kg.

Optional: Mounting plate / floor stand



BNS PROFESSIONAL A-3

GENERAL PURPOSE MONITOR

CABINET

To achieve an optimum shape and at the same time controlling the panel resonances a polyurethane cabinet is used. Diffraction is low due to the recessed front edges. A protective mesh-wire grill is provided. The cabinet is finished in a grey spatter finish.

THE DRIVERS

The A-3 uses a 200 mm bass-driver with a kevlar cone to ensure low coloration in a vented 25 l. cabinet. The cabinet is filled with damping material along the sides and inside the cabinet. The tweeter is a unique ribbon design which takes over at 2400 Hz. It is a Dutch development offering extremely low distortion at very high sound pressure levels. The low coloration make it especially suitable for monitor use. Reflexions from the mixing console e.g. are minimized and so colorations are reduced.

INPUT AND CROSS-OVER CIRCUIT

The A-3 has a balanced transformerless input with an XLR connector. A second parallel connector is provided to form a daisy chain bus, so a larger number of speakers can be linked up. The electronic cross-over is of the Linkwitz-Riley type with a 24 dB/octave slope. This gives a controlled directivity. A bass control switch with four (3 dB) steps is included to adjust the monitor to its acoustical environment. An input level control (-14 dBm to +6 dBm) makes it possible to adjust the A-3 to the output level of your mixing console.

AMPLIFIERS

The two power amplifiers deliver 50 W max. peakpower each. The bass amplifier has a continuous output of 35 W, the treble amplifier 20 W. The lower level of continuous power protects the tweeter without limiting the output capacity on musical signals. The power amplifiers are equipped with a switch-on delay, thermal and short-circuit protection.

COMPLETE CONSTRUCTION

Maintenance of the monitors is straightforward and very easy due to the rugged and simple construction. The electronics are mounted at the back of the monitors on a heatsink. All the monitors are individually tested in our anechoic room and are delivered with a certificate.

TECHNICAL SPECIFICATIONS

Frequency range: 50 Hz-32 kHz +/- 2 dB
Max. sound press.: 105 dB/1m/1000 Hz
Distortion: @ 96 dB 200 Hz-20 kHz <0.5%
 @ 96 dB 60 Hz-200 Hz <5%
 @ 100 dB 200 Hz-20 kHz <1%

Colour: RAL 7011

Cross-over frequency: 2,4 kHz

AC power inlet with fuse and
3-pin Euro Connector.

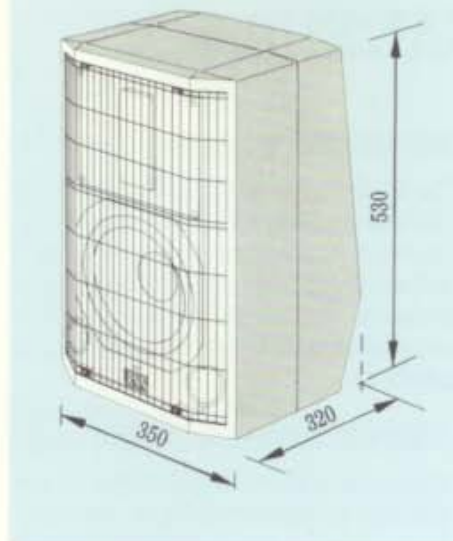
Input imp.: 10 kΩ symmetrical.

Input level: -14 dBm to +6 dBm,
for full output.

Power consumption: 90 W, 116 VA
@ 220 V, 50Hz.

Weight: 24 kg.

Optional: Floor stand

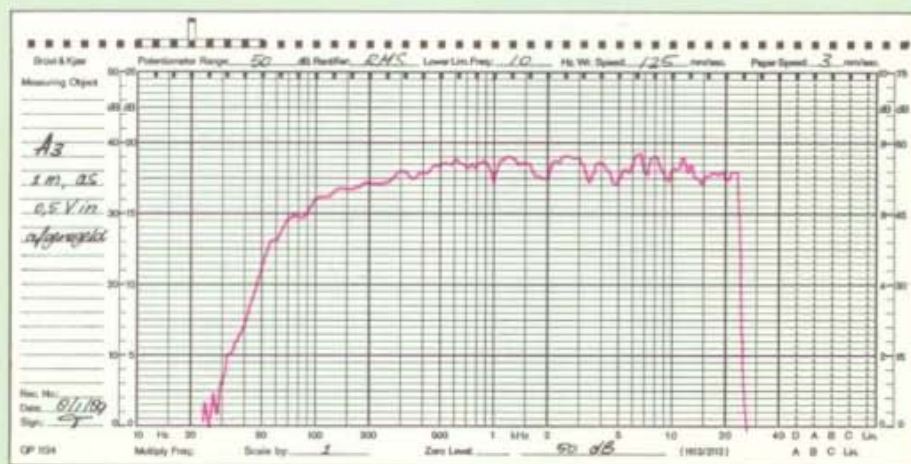


A-3 APPLICATIONS

- Broadcast control rooms.
- Reference monitor.
- Post production.
- Video and audio editing.
- O.B. vans.

SYSTEM DESCRIPTION

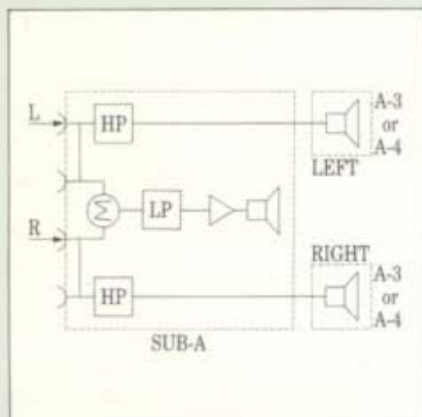
The BNS A-3 is a two-way design that includes an active cross-over, input amplifier and two power amplifiers. It is intended for small to medium sized control rooms. Due to its input level control and low frequency compensation switch it can be used in different rooms and acoustical surroundings.



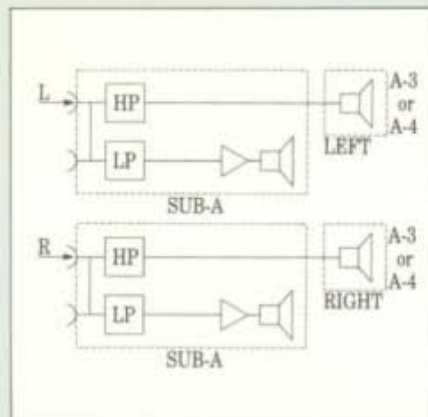
Frequency response

BNS PROFESSIONAL SUB-A

FOUNDATION FOR YOUR MONITOR



Application as a common-bass subwoofer.



Application as a separate subwoofer for each channel.

SUB-A APPLICATIONS

- When a lower bass response is required than is possible with the A-3 monitor, or A-4 monitor.
- To increase the maximum sound level of your main monitors, at very low frequencies

SYSTEM DESCRIPTION

The BNS SUB-A is a symmetrically loaded bandpass woofer developed by BNS. The cabinet of the SUB-A is made of a sandwich construction of two layers of MDF and plywood which are elastically bonded together. The shape of the SUB-A is the same as of the A-3 so they form a natural pair. The SUB-A contains its own electronic cross-over and power amplifier so it is ready to use with the A-3 and monitors of the same kind.

THE DRIVER

The SUB-A uses a 250 mm woofer with a paper cone. The woofer has a very large magnet system, magnesium basket and a long throw / low distortion motor. The woofer is mounted inside the cabinet and is acoustically connected with the outside by two reflex pipes.

INPUT AND CROSS-OVER CIRCUIT

The SUB-A has multiple XLR inputs and outputs, so you can use the SUB-A single or double in a system (see diagrams). The electronic cross-over is symmetrically built so the connection(s) to the monitor loudspeakers are balanced. On the back are the inputs, and a stepped volume control (2 dB steps).

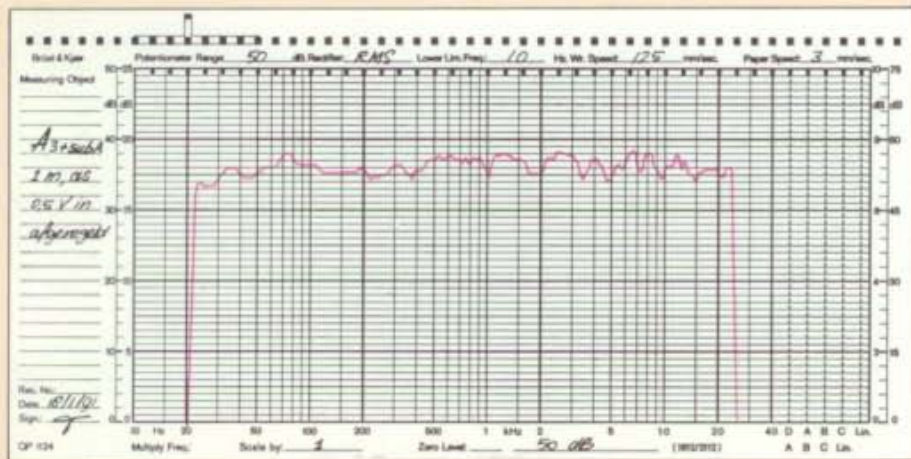
AMPLIFIER

The MOS-FET power amplifier can deliver 200 W directly to the bass loudspeaker. There's no limiting on the output capacity of the power amplifier. The amplifier is protected against overload, high temperature and DC on the output terminals.

COMPLETE CONSTRUCTION

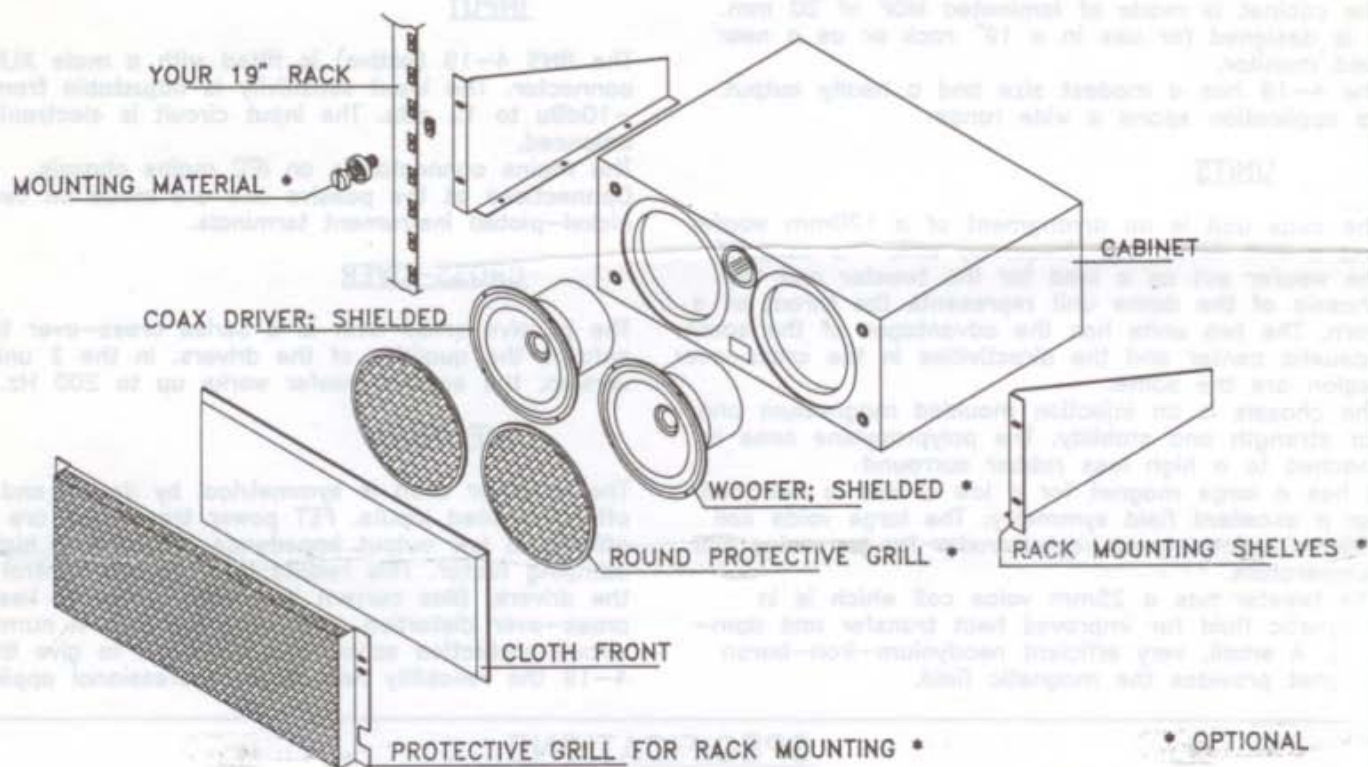
Maintenance of the SUB-A is like all our monitors straightforward and very easy due to the rugged and simple construction. The electronics are mounted at the back of a heatsink.

Sub. A + A-3



Frequency response

RACK MOUNTING MONITORING SYSTEM



PROPERTIES

- 2-WAY COAX SYSTEM
- SPECIALLY DESIGNED FOR RACK MOUNTING
- HEALTHY OUTPUT WITH LOW THD
- POINT SOURCE
- ACTIVE AND PASSIVE VERSION
- USABLE AS NEAR-FIELD MONITOR
- THOROUGH MAGNETIC SHIELDING

APPLICATIONS

- CONTROL MONITOR IN 19" RACKS
- CABLE T.V. FACILITIES
- VIDEO EDITING SUITES
- JINGLE STUDIOS
- RADIO AND TV STUDIOS
- AUDIO POSTPRODUCTION SUITES
- ENG VANS
- OB VANS

DESCRIPTION

The 4-19 is a rack mountable monitor. It is available in an active or passive version.

By adding a woofer the bass output can be extended. The coax driver and the optional woofer are thorough shielded, so you can place this monitor loudspeaker in the direct surrounding of your T.V. monitors.

Through its modest size and its coax driver (point source) you can also use the 4-19 as a near field monitor.

The size of the 4-19 makes it possible to fit the 4-19 in a 19" rack were it takes 4 units high.

OVERALL CONSTRUCTION

While designing the 4-19 attention is payed to the apperance and maintenance cost. The cabinet of the 4-19 is covered with formica to make it more rugged. On the back of the cabinet is a seapearate space to hold the power amplifier. This power amplifier can be taken out in a matter of seconds to do the necessary maintenance.

SYSTEM DESCRIPTION

GENERAL

The 4-19 is a 2-way system. It can be extended with a second woofer and/or a power amplifier. The cabinet is made of laminated MDF of 20 mm. It is designed for use in a 19" rack or as a near field monitor.

The 4-19 has a modest size and a healthy output. Its application spans a wide range.

UNITS

The coax unit is an arrangement of a 170mm woofer and a soft dome high frequency unit. The cone of the woofer act as a load for the tweeter and the chassis of the dome unit represents the throat of a horn. The two units has the advantages of the same acoustic center and the directivities in the cross-over region are the same.

The chassis is an injection moulded magnesium one, for strength and stability. The polypropylene cone is mached to a high loss rubber surround.

It has a large magnet for a low Q and is designed for a excellent field symmetry. The large voice coil (39mm) allows good-heat transfer for low voice coil temperature.

The tweeter has a 25mm voice coil which is in magnetic fluid for improved heat transfer and damping. A small, very efficient neodymium-iron-boron magnet provides the magnetic field.

In the double unit version the second woofer has the same specifications as the woofer part in the coax driver. This woofer assist the coax driver only in the low frequencies.

INPUT

The BNS 4-19 (active) is fitted with a male XLR connector. The input sensitivity is adjustable from -10dBu to 12 dBu. The input circuit is electronically balanced.

The mains connector is an IEC mains chassis. Connections at the passive one are made on two nickel-plated instrument terminals.

CROSS-OVER

The passive cross-over is a series cross-over that enforce the qualities of the drivers. In the 2 unit version, the second woofer works up to 200 Hz.

AMPLIFIERS

The amplifier used is symmetrical by design and offer balanced inputs. FET power transistors are used, offering a low output impedance and thus a high damping factor. This results in a perfect control of the drivers. Bias current is relatively high to keep cross-over distortion as low as possible. A number of circuit protection schemes are applied to give the 4-19 the reliability needed for professional application.

SPECIFICATIONS.

GENERAL.

FREQUENCY RESPONSE	: 48-20,000 Hz ±3dB
	: 45-20,000 Hz ±3dB *
MAX. ACOUSTIC OUTPUT	: 98 dB AT 1m IN 2π
	: 100 dB AT 1m IN 2π
DISTORTION ● 96dB 200Hz-20kHz	: <1%
● 96dB 40Hz-200Hz	: <5%
MAX. ACOUSTIC PEAK OUTPUT	: 100 dB AT 1m IN 2π
(2s WITH MUSIC SIGNAL)	: 103 dB AT 1m IN 2π *
INPUT SENSITIVITY (0 dBm INPUT AND CONTROL IN LOWEST POS.)	: 89 dB
INPUT SENSITIVITY (PASSIVE VERSION)	: 88 dB
SIGNAL TO NOISE, INPUT SHORTED	: 103 dB BELOW FULL OUTPUT
MAINS VOLTAGE	: 220VAC 50/60Hz ±10%
POWER CONSUMPTION	: 20VA NO SIGNAL
	: 200VA MAX. OUTPUT
DIMENSIONS CABINET	: 443x315x177 mm (WxDxH)
WEIGHT	: 8 kg PASSIVE
	: 15 kg ACTIVE *
COLOR	: GREY
INDICATORS	: ON, AMP ON, AMP PROT. IN

INPUT AND CROSS-OVER.

INPUT IMPEDANCE	: 20 KOHM BALANCED (ACTIVE)
INPUT LEVEL	: +12dBu MAX. CONTINUOUSLY VARIABLE FROM -10 TO +12 dBu
INPUT SYSTEM	: ELECTRONIC BALANCED
INPUT CONNECTOR	: 1, XLR MALE PIN 1 GROUND PIN 2 + PIN 3 -
INPUT PASSIVE	: NICKEL-PLATED INSTRUMENT TERMINALS
SUBSONIC FILTER	: 12 dB/OCT. -3 dB ● 25Hz (ACTIVE)
ULTRASONIC FILTER	: 6 dB/OCT. -3 dB ● 50kHz (ACTIVE)
CROSS-OVER FREQUENCY	: 3000Hz (200/3000Hz)*
CROSS-OVER SLOPE	: 2nd ORDER PASSIVE SERIES FILTER

POWER AMPLIFIER

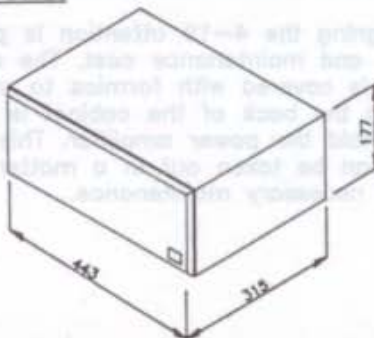
POWER AMPLIFIER	: CONTINUOUS 80W, 125W PEAK (1s)
FREQUENCY RANGE	: DC-20kHz ±0.07 dB
PHASE SHIFT	: 20Hz 0°, 20kHz -6°
DISTORTION	: THD 0.08% MAX. AT 10W 20Hz - 20kHz
SLEW RATE	: > 25V/μs
PROTECTION	: COMPLETE AGAINST DC, SUBSONIC OR HF SIGNALS TEMPERATURE MAINSPOWER FAILURE, POWERSUPPLY FAILURE, FREQUENCY DEPENDING PROTECTION POWERTRANSISTORS, DELAYED SWITCH ON.

DRIVERS.

COAX DRIVER	: 150mm NOMINAL 88dB SENSITIVITY WITH POLY-PROPYLENE CONE, CENTRAL PLACED SOFT DOME
WOOFER *	: 150mm NOMINAL 88dB SENSITIVITY WITH POLY-PROPYLENE CONE.

* WITH SECOND WOOFER

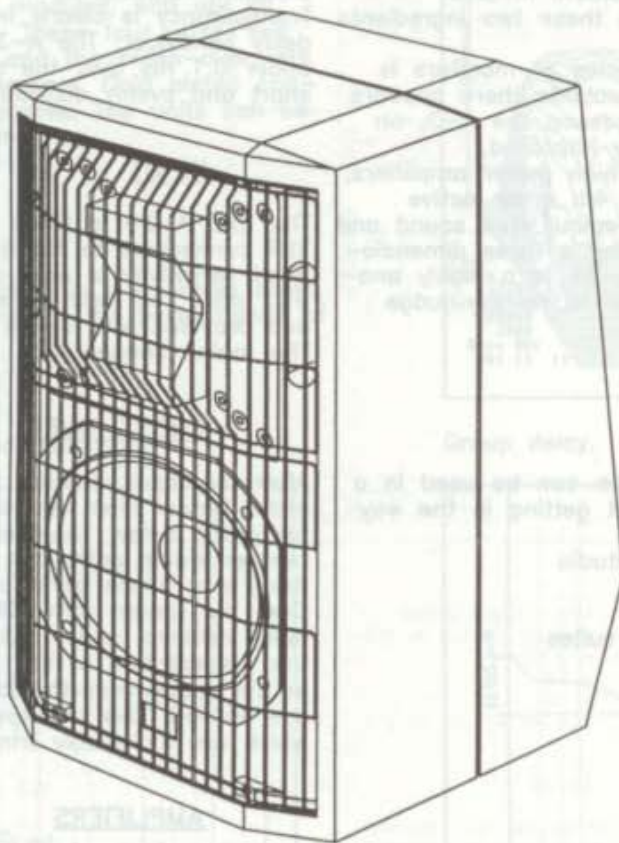
DIMENSIONS.



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BNS PROFESSIONAL MONITOR A-3+

OVERALL CONSTRUCTION



STUDIO MONITORING SYSTEM

PROPERTIES

- ACTIVE 2-WAY SYSTEM
- SPECIALLY DESIGNED FOR STUDIOS
- LOW DISTORTION ON HIGH SPL
- TIME ALIGNED WOOFER AND TWEETER
- PHASE /AMPLITUDE CORRECTION
- UNIQUE RIBBON TWEETER

APPLICATIONS

- REFERENCE MONITOR
- BROADCAST CONTROL ROOMS
- CD RECORDING STUDIOS
- JINGLE STUDIOS
- RADIO AND TV STUDIOS
- AUDIO POSTPRODUCTION SUITES
- ENG VANS
- OB VANS



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NEDERLAND

A-3+

BNS PROFESSIONAL MONITOR A-3+

SCHEMATIC DIAGRAM

GENERAL

Designing a monitor loudspeaker is not all science. It is a mix of knowledge and intuition. In BNS Professional Monitor Loudspeakers these two ingredients form a fascinating symbiosis.

The most recent model in our series of monitors is the A-3+. And although on the outside there appears to be no difference to its predecessor, the A-3, on the inside the A-3+ is drastically improved. The polyurethane cabinet houses high power amplifiers, driven by a special time aligning 4th order active cross-over filter. This lead to a colour free sound and an impressive sound stage, offering a three dimensional sound stage. Therefore the A-3+ is a highly analytical instrument that enables you to reliably judge your sound on.

APPLICATIONS

Due to its compact size the A-3+ can be used in a large number of situations without getting in the way:

- the modern OB van
- virtually any broadcast studio
- monitoring in theatres
- the recording studio
- audio and video editing suites
- digital post production
- sound restoration suites
- quality approval suites

SYSTEM DESCRIPTION

GENERAL

The A-3+ is a 2-way system that comprises built-in amplifiers and an electronic cross-over. The cabinet could be shaped according to acoustic laws due to the use of polyurethane. The A-3+ is designed for use in medium sized to large control rooms where a high quality sound and a relatively high sound pressure level (> 100 dB SPL) is needed.

UNITS

Low and mid frequencies are handled by a woofer that was specially designed for use in a 2-way monitor system. The woofer has a double spider, a magnet construction that offers a symmetrical magnetic field and a long voice coil driving a specially formed and damped cone. The voice coil former is made of Kapton. All these properties offer extremely good low and mid-range response and transient behaviour.

Above 2,250 Hz the special ribbon tweeter takes over. The voice coil of this unit is mounted on a high temperature diaphragm (450°C) and therefore drives the entire radiation area. The total weight of the diaphragm and the coil is only one tenth of that of a conventional unit. Therefore a frequency response exceeding 30kHz could be obtained. Since the diaphragm is large and not restricted in its movement, the distortion remains under 2% even at higher levels. Being a ribbon type driver the unit does not

suffer from dynamic compression and offers excellent transient reproduction. Transparency is clearly influenced by superior group delay behaviour. The A-3+ tweeter has a group delay under 0.1 ms over the bandwidth used. The decay is short and evenly distributed in the frequency domain.

INPUT

The BNS A-3+ is fitted with both male and female XLR connectors to facilitate easy daisy chaining. The input sensitivity is user adjustable from -10 dBu to +12 dBu. The input circuit is electronically balanced and provided with a line interference suppressor. The mains connector is an IEC mains chassis.

CROSS-OVER

After the input circuitry the signal is split by a 4th order Bessel filter and time aligned to compensate for group delay. Together with the time delay in the tweeter signal path, this offers a superb total group delay and phase behaviour in the acoustic output. Over the range from 100 Hz up to 20kHz the group delay remains under 1.3 ms. As a function of this the presentation of the sound picture is very realistic. In the cross-over the latest generation of Op-Amps are applied. This are special designed audio I.C.'s which are individually trimmed.

AMPLIFIERS

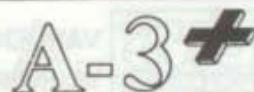
The amplifiers used are symmetrical by design and offer balanced inputs. FET power transistors are used, offering a low output impedance and thus a high damping factor. This results in a perfect control of the drivers. Bias current is relatively high to keep cross-over distortion as low as possible. A number of circuit protection schemes are applied to give the A-3+ the reliability needed for professional applications. The woofer is driven by a 125 W RMS (250 W peak) amplifier whilst the tweeter is powered by a 60 W RMS (125 W peak) amplifier. Due the optimal amplifier-driver matching, a more than sufficient headroom above the specified 110 dB SPL is available.

CABINET

The A-3+ cabinet is made of polyurethane. The moulding technique used facilitates the special shape, both acoustically and aesthetically superb. At the initial stage of design, the cabinet of the A-3, the predecessor of the A-3+, was taken as starting point. To further improve the bass reproduction, the cabinet was enlarged, the round bass reflex ports were replaced by critically placed slits to reduce acoustic noise. The drivers are protected by a metal grid, offering a good physical protection without damping the sound. A special display behind the BNS logo offers information on the status of both amplifiers. The A-3+ weights 32 kg and is finished in grey.



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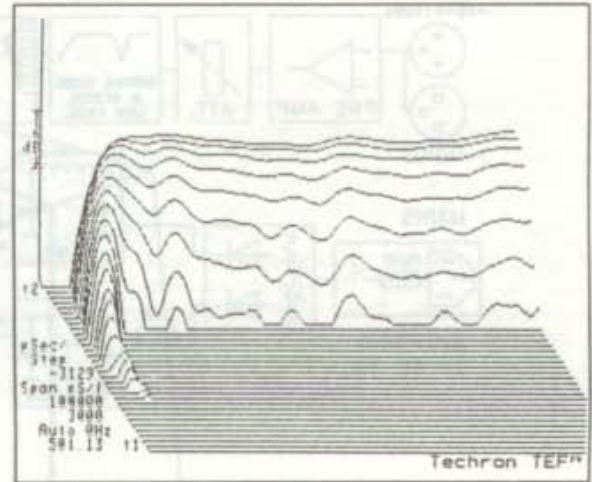
OVERALL CONSTRUCTION

While designing the A-3+ special attention is paid to maintenance cost. A periodical visual inspection and some cleaning will normally be sufficient. All electronics is divided in four modules, who are all mounted on the cooling sink. These four units, two amplifiers, The power supply and the cross-over, are connected using locking connectors. Gold plated connectors are used in critical places. The units can be taken apart in a matter of minutes.

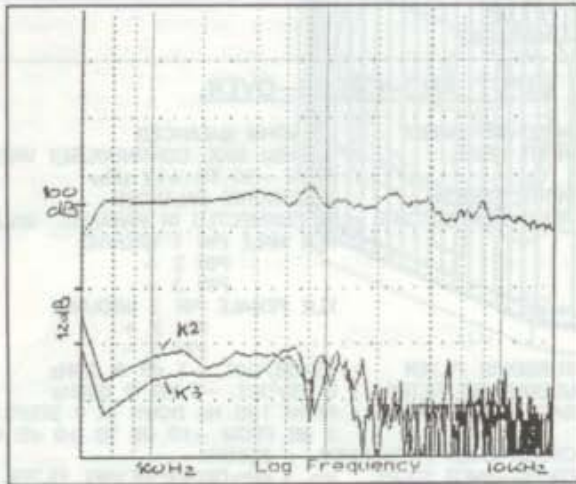
MEASUREMENTS

Following measurements are taken in a anechoic room, measuring 500 m³, and represent the performance of the A-3+ itself.

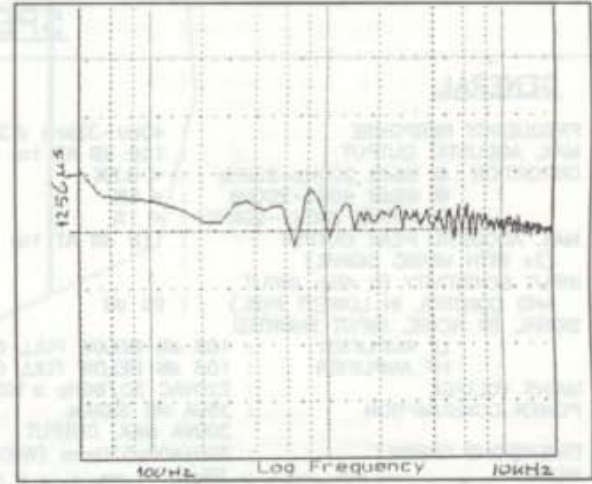
Cumulative decay spectrum.



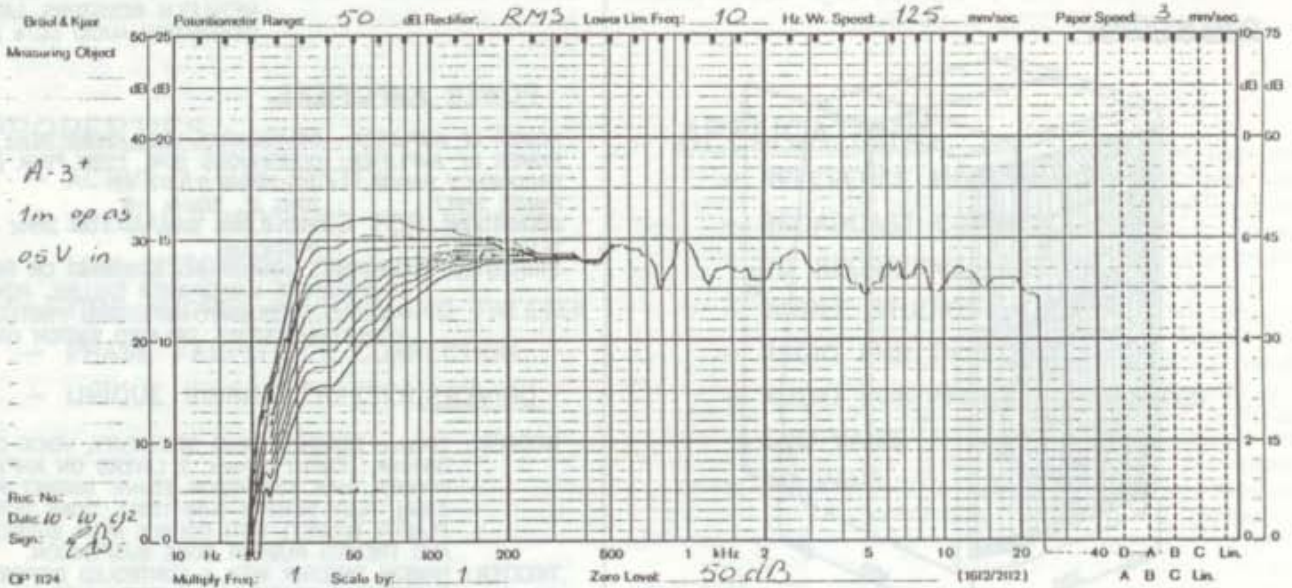
Frequency response and distortion.



Group delay.

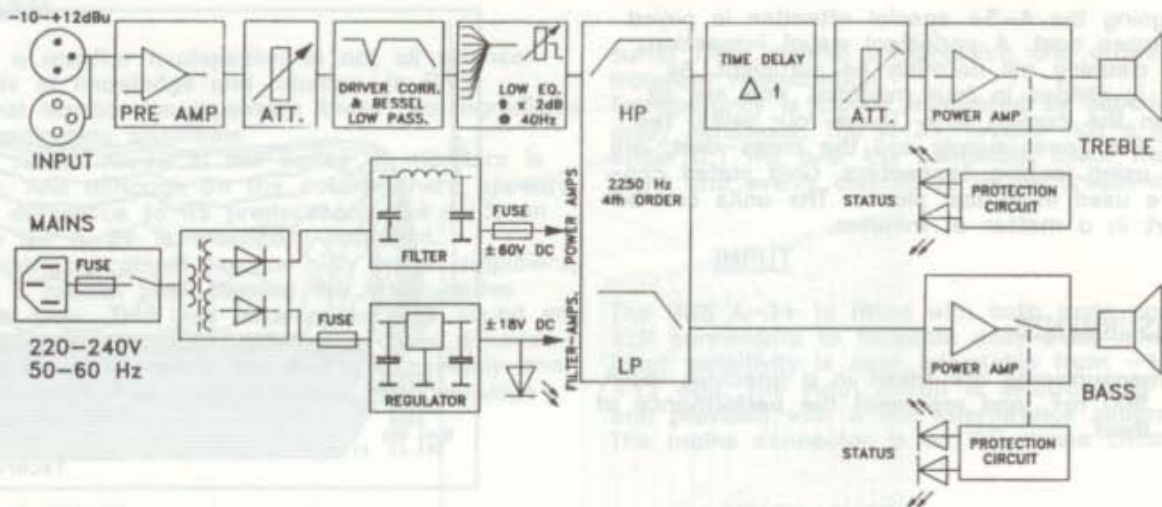


Frequency response and bass control settings.



BNS PROFESSIONAL MONITOR A-3+

SCHEMATIC DIAGRAM

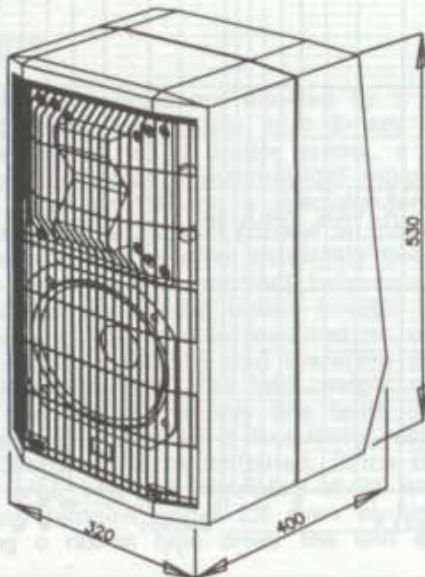


SPECIFICATIONS.

GENERAL.

FREQUENCY RESPONSE	: 40Hz-32kHz \pm 3dB
MAX. ACOUSTIC OUTPUT	: 110 dB AT 1m IN 2 π
DISTORTION	<ul style="list-style-type: none"> ● 96dB 200Hz-20kHz : < 0.5% ● 96dB 40Hz-200Hz : < 5% ● 100dB 200Hz-20kHz : < 1%
MAX. ACOUSTIC PEAK OUTPUT (2s WITH MUSIC SIGNAL)	: 115 dB AT 1m IN 2 π
INPUT SENSITIVITY (0 dBm INPUT AND CONTROL IN LOWEST POS.)	: 90 dB
SIGNAL TO NOISE, INPUT SHORTED	
LF AMPLIFIER	: 108 dB BELOW FULL OUTPUT
HF AMPLIFIER	: 103 dB BELOW FULL OUTPUT
MAINS VOLTAGE	: 220VAC 50/60Hz \pm 10%
POWER CONSUMPTION	: 35VA NO SIGNAL 300VA MAX. OUTPUT
DIMENSIONS CABINET	: 320x400x530mm (WxDxH)
WEIGHT	: 32kg
COLOR	: RAL 7016
INDICATORS	: ON, LF AMP ON, LF AMP PROT. IN HF AMP ON, HF AMP PROT. IN

DIMENSIONS.



INPUT AND CROSS-OVER.

INPUT IMPEDANCE	: 20 KOHM BALANCED
INPUT LEVEL	: +12dBu MAX. CONTINUOUSLY VARIABLE FROM -10 TO +12 dBu
INPUT SYSTEM	: ELECTRONIC BALANCED
INPUT CONNECTORS	: 2, CONNECTED IN PARALLEL MALE/FEMALE XLR MALE PIN 1 GROUND PIN 2 + PIN 3 - XLR FEMALE PIN 1 GROUND PIN 2 + PIN 3 -
SUBSONIC FILTER	: 12 dB/OCT. -3 dB @ 25Hz
ULTRASONIC FILTER	: 6 dB/OCT. -3 dB @ 50kHz
BASS CORRECTION	: FROM 180 Hz DOWN IN 9 STEPS OF 2 dB FROM -10 dB TO +6 dB @ 40Hz
CROSS-OVER FREQUENCY	: 2250Hz
CROSS-OVER SLOPE	: 4th ORDER BESSEL FILTER, WITH GROUP DELAY COMPENSATION FOR THE TWEETER. HIGH GRADE COM- PONENTS F.I. 1% CAPACITORS, METALFILM RESISTORS, LATEST GENERATION AUDIO I.C.'s A.S.O.

POWER AMPLIFIERS.

POWER LF AMPLIFIER	: CONTINUOUS 125W, 250W PEAK (1s)
POWER HF AMPLIFIER	: CONTINUOUS 60W, 125W PEAK (1s)
FREQUENCY RANGE	: DC-20kHz \pm 0.07 dB
PHASE SHIFT	: 20Hz σ , 20kHz -6°
DISTORTION	: THD 0.08% MAX. AT 10W 20Hz - 20kHz
SLEW RATE	: > 25V/ μ s
PROTECTION	: COMPLETE AGAINST DC, SUBSONIC OR HF SIGNALS, TEMPERATURE MAINSPOWER FAILURE, POWERSUPPLY FAILURE, FREQUENCY DEPENDING PROTECTION POWERTRANSISTORS, DELAYED SWITCH ON.

DRIVERS.

WOOFER	: 200mm NOMINAL, 89dB SENSITIVITY, VOICE COIL 38mm ϕ , LENGTH 17mm, 2 LAYERS ON KAPTON FORMER. MAX. EXCURSION 25mm. MAGNET WEIGHT 3.6kg, FLUX DENSITY 0.95 TESLA. CONE DOPED PLASTIC (COBEX) WITH DOUBLE REAR SUSPENSION AND TREATED RUBBER CONE SUSPENSION.
TWEETER	: RIBBON TWEETER WITH A CONTROLLED DISPERSION. RADIATING SURFACE 30cm ² . THD < 0.2%. 91dB SENSITIVITY, MAGNET WEIGHT 4.2kg



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