

Antenna Splitter ASA 1



Instruction manual

Contents

- Important safety instructions..... 2
- The ASA 1 active antenna splitter 4
 - Combination possibilities of
ASA 1/ASA 1-1G8 5
- Delivery includes..... 5
- Operating elements..... 6
- Putting the ASA 1 into operation..... 8
 - Preparing the ASA 1 for use..... 8
 - Connecting devices to the ASA 1 and switching the
ASA 1 on..... 14
 - Making an 8-channel system using the ASA 1..... 17
- Cleaning the ASA 1..... 20
- If a problem occurs..... 20
- Specifications 21
- Manufacturer Declarations 22

Important safety instructions

- Read this instruction manual.
- Keep this instruction manual. Always include this instruction manual when passing the device on to third parties.
- Heed all warnings and follow all instructions in this instruction manual.
- Clean only with a slightly damp cloth.
- Refer all servicing to qualified service personnel. Servicing is required if the device has been damaged in any way, liquid has been spilled, objects have fallen inside, the device has been exposed to rain or moisture, does not operate properly or has been dropped.
- **WARNING:** To reduce the risk of fire or electric shock, do not use the device near water and do not expose it to rain or moisture. Do not place objects filled with liquids, such as vases or coffee cups, on the device.
- Only use the NT 1-1 mains unit.
- Do not block any ventilation openings. Install the device in accordance with the instructions given in this manual.
- Do not install the device near any heat sources.
- Only use attachments/accessories specified by Sennheiser.

Replacement parts

When replacement parts are required, be sure the service technician uses replacement parts specified by Sennheiser or those having the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety check

Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in a safe operating condition.

Intended use

Intended use of the ASA 1 includes:

- having read and understood this instruction manual especially the chapter “Important safety instructions” on page 2,
- using the device within the operating conditions and limitations described in this instruction manual.

“Improper use” means using the ASA 1 other than as described in this instruction manual, or under operating conditions which differ from those described herein.

The ASA 1 active antenna splitter

The ASA 1 active antenna splitter has been designed to enable routing of UHF antenna signals to several receivers in a multi-channel system. Up to four diversity receivers may be supplied with signal by only two antennas. The integral RF amplifiers ensure that the ASA 1 does not introduce any additional UHF signal loss.

The ASA 1 incorporates DC distribution to enable simultaneous powering of up to four receivers and two antenna boosters via its BNC sockets. The antenna boosters may be required in order to compensate for cable losses due to long antenna cables. A single NT 1-1 mains unit (to be ordered separately) is required to power the ASA 1, the connected receivers and antenna boosters.

By linking two ASA 1, an 8-channel diversity system can be operated with only two antennas.

Using the GA 3 rack adapter, two ASA 1 or one ASA 1 and one stationary receiver (e.g. EM 100 G3, EM 300 G3 or EM 500 G3) can be mounted into a 19" rack.

The ASA 1 is suitable for the following areas of application:

- Multi-channel RF installations
- Permanent installations in small conference centres and similar venues

Combination possibilities of ASA 1/ASA 1-1G8

The ASA 1 active antenna splitter is also available for the 1785–1805 MHz frequency range (ASA 1-1G8). The following table shows the combination possibilities for both devices.

Device/product class	Combination possibilities	
	ASA 1	ASA 1-1G8
Receivers	EM x00 G3-A1, -A, -G, -GB, -B, -C, -D, -E	EM x00 G3-1G8
Rod antennas	not labeled	labeled "1G8"
Remote antennas	A 2003, A 1031	AD 1800
Antenna boosters	AB 3-A1, -A, -G, -GB, -B, -C, -D, -E	AB 3-1G8

Delivery includes

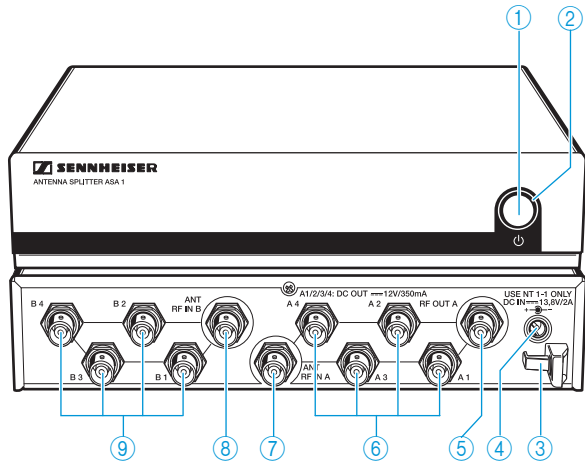
- 1 ASA 1/ASA 1-1G8 antenna splitter
- 1 set of device feet
- 8 BNC cables
- 1 instruction manual

You additionally require the NT 1-1 mains unit with a suitable mains connector (available as accessory).



A list of accessories can be found on the ASA 1 product page at www.sennheiser.com.

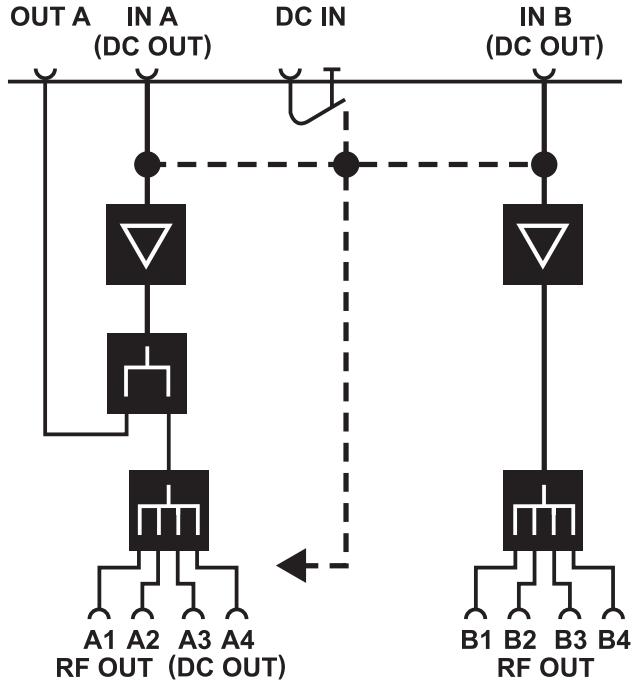
Operating elements



- ① Standby button
- ② Operation indicator
- ③ Cable grip for cable of mains unit
- ④ DC IN socket
for connection of NT 1-1 mains unit
- ⑤ BNC socket RF OUT A
RF output only for connection of an additional ASA 1
(to create a 1-to-8 diversity splitter)
- ⑥ Four BNC sockets A1 to A4
RF outputs of diversity section A for connection of the
receivers
Each of these RF outputs can power one receiver.
- ⑦ BNC socket ANT RF IN A
antenna input of diversity section A
- ⑧ BNC socket ANT RF IN B
antenna input of diversity section B
Each of the BNC sockets ANT RF IN A ⑦ and
ANT RF IN B ⑧ can power two AB 3 antenna boosters.
- ⑨ Four BNC sockets B1 to B4
RF outputs of diversity section B for connection of the
receivers

Block diagram

The below block diagram (also depicted on the base of the device) shows the signal flow in the device.



Putting the ASA 1 into operation

Preparing the ASA 1 for use

Setting up the ASA1 on a flat surface

For table-top use, fix the device feet to the base of the ASA 1.

CAUTION

Risk of staining of surfaces!

Surfaces are often treated with varnish, polish or synthetics which might cause stains when they come into contact with other synthetics such as the device feet.

▶ Do not place the ASA 1 on delicate surfaces.

▶ Ensure that the base of the ASA 1 is clean and free from grease before fitting the device feet.

▶ Fix the device feet to the base of the ASA 1 by peeling off the backing paper and fitting them as shown on the left.

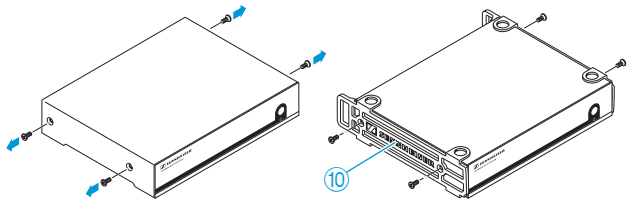
▶ Place the ASA 1 on a flat, horizontal surface.



Fastening the stacking elements

The stacking elements are designed to help protect the operating elements from damage or deformation, e.g. if the ASA 1 is dropped.

To fasten the stacking elements:



- ▶ Unscrew and remove the four recessed head screws (M4x8).
- ▶ Secure the stacking elements ⑩ to the ASA 1.

Stacking several ASA 1

You can stack the ASA 1 and the receivers on top of each other.

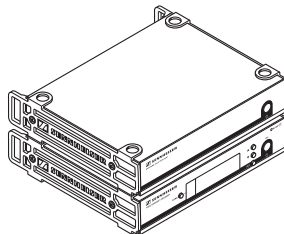


CAUTION

Danger of injury due to toppling stacks!

High stacks can easily topple over.

- ▶ Place the stack on an absolutely flat surface.
- ▶ Secure the stack against toppling over.



- ▶ Stack the devices so that the recesses of the stacking elements completely engage with each other.

Mounting the ASA 1 into a 19" rack

Do not fit the device feet when mounting the ASA 1 into a 19" rack.



CAUTION

Risks when rack mounting the device!

When installing the device in a closed or multi-rack assembly, please consider that, during operation, the ambient temperature, the mechanical loading and the electrical potentials will be different from those of devices which are not mounted into a rack.

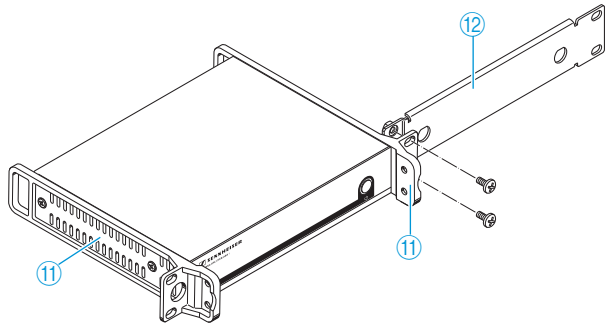
- ▶ The ambient temperature within the rack must not exceed the temperature limit specified in the specifications.
- ▶ When rack mounting, take good care not to affect the ventilation required for safe operation. If necessary, provide additional ventilation.
- ▶ Make sure that the mechanical loading of the rack is even.
- ▶ When connecting to the power supply, observe the information indicated on the type plate. Avoid circuit overloading. If necessary, provide overcurrent protection.
- ▶ When rack mounting, please note that intrinsically harmless leakage currents of the individual mains units may accumulate, thereby exceeding the allowable limit value. As a remedy, ground the rack via an additional ground connection.

For rack mounting the ASA 1, you require:

- the GA 3 19" rack
- rack mount "ears"

**Rack mounting one
ASA 1**

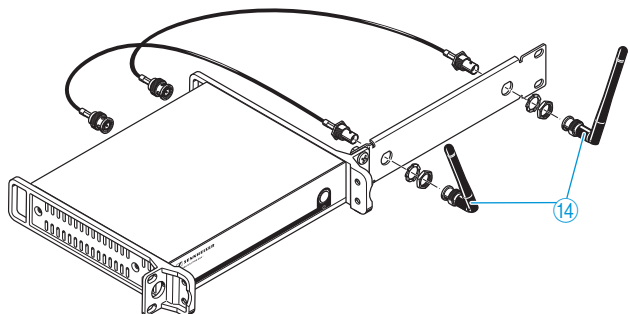
- ▶ Unscrew and remove the two recessed head screws (M4x8) on one side of the ASA 1.



- ▶ Hold one rack mount "ear" to the ASA 1.
- ▶ Secure the rack mount "ear" ⑪ to the side of the ASA 1 using the two recessed head screws.
- ▶ Repeat for the other rack mount "ear" as described above.
- ▶ Secure the blanking plate ⑫ to one of the rack mount "ears" ⑪ using two recessed head screws (M6x10).

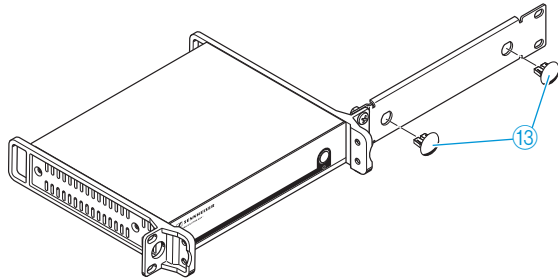
If you are using rod antennas and want to front mount them:

- ▶ Use the optional AM 2 antenna front mount kit.



If you are using rod antennas and do **not** want to front mount them:

- ▶ Insert the two blanking plugs ⑬ into the holes of the blanking plate:

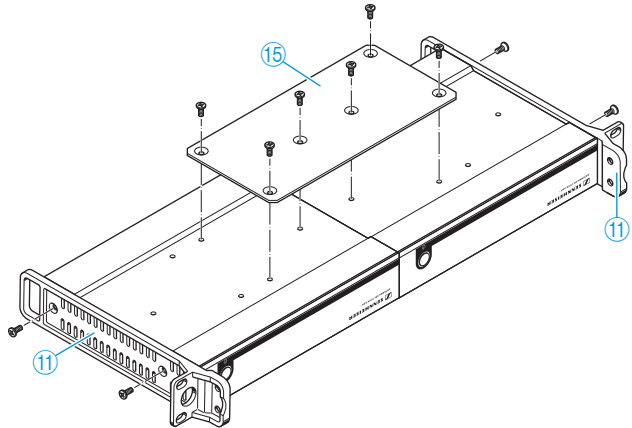


To mount the ASA 1 into the rack:

- ▶ Slide the ASA 1 with the mounted blanking plate into the 19" rack.
- ▶ Secure the rack mount "ears" ⑪ to the 19" rack.

Rack mounting two devices into the same 19" slot

- ▶ Place the two devices (e.g. the ASA 1 and a stationary receiver) side by side upside-down onto a flat surface:



- ▶ Secure the jointing plate 15 to the devices using six recessed head screws (M3x6).
- ▶ Secure the rack mount "ears" 11 to the devices as described in the section "Rack mounting one ASA 1" on page 11.

To mount the devices into the rack:

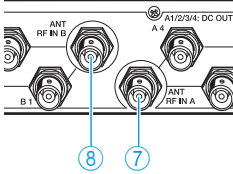
- ▶ Slide the devices into the 19" rack.
- ▶ Secure the rack mount "ears" to the 19" rack.

Connecting devices to the ASA 1 and switching the ASA 1 on

Connecting the antennas

Connecting remote antennas

i To ensure optimum reception even under difficult reception conditions, we recommend using remote antennas.



- ▶ Connect two passive antennas or a combination of passive antenna and antenna booster to the BNC sockets **ANT RF IN A** ⑦ and **ANT RF IN B** ⑧:

Device/ product class	Combination possibilities	
	ASA 1	ASA 1-1G8
Remote antennas	A 2003, A 1031	AD 1800
Antenna boosters	AB 3-A1, -A, -G, -GB, -B, -C, -D, -E	AB 3-1G8

Connecting rod antennas

- ▶ Select suitable rod antennas ⑭ for your antenna splitter:

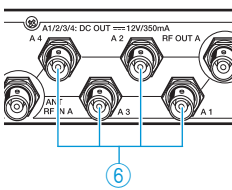
Device/product class	Combination possibilities	
	ASA 1	ASA 1-1G8
Rod antennas	not labeled	labeled "1G8"

- ▶ Connect the antennas to the BNC sockets **ANT RF IN A** ⑦ and **ANT RF IN B** ⑧ or to the previously mounted AM 2 antenna front mount kit (see page 11).
- ▶ Align the antennas in a V-shape to ensure optimum reception.

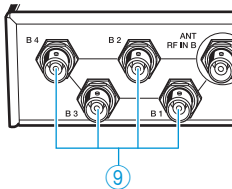
Connecting the receivers

You can connect up to four stationary receivers to the ASA 1. The splitter also incorporates DC distribution for powering the receivers:

Device/product class	Combination possibilities	
	ASA 1	ASA 1-1G8
Receivers	EM x00 G3-A1, -A, -G, -GB, -B, -C, -D, -E	EM x00 G3-1G8



- ▶ Connect one of the receiver's antenna inputs to one of the BNC sockets **A1** to **A4** (6). Suitable BNC cables are included in the delivery. These receivers do not require their individual power supply. They are now powered via the BNC sockets **A1** to **A4** (6).

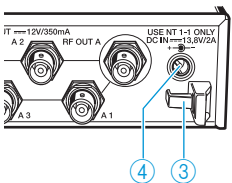


- ▶ Connect the other antenna input of the receiver to one of the BNC sockets **B1** to **B4** (9). Suitable BNC cables are included in the delivery.

Connecting the ASA 1 to the mains

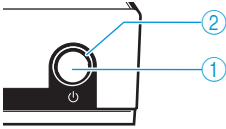
To power the ASA 1, the connected receivers and two optional antenna boosters, you require the NT 1-1 mains unit.

- i** Only use the NT 1-1 mains unit with the blue DC connector. It is designed for the ASA 1 and ensures safe operation.



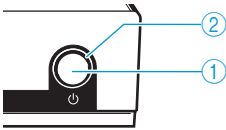
- ▶ Pass the cable of the NT 1-1 mains unit through the cable grip (3).
- ▶ Insert the blue DC connector of the NT 1-1 mains unit into the **DC IN** socket (4).
- ▶ Plug the mains unit into a wall socket. The operation indicator (2) lights up green. The ASA 1 is ready for operation.

Switching the ASA 1 on



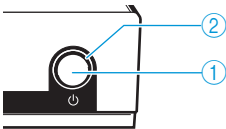
- ▶ Briefly press the Standby button ①. The operation indicator ② lights up green. The RF signals of the connected antennas are distributed to all connected receivers.

Setting the ASA 1 to standby mode



- ▶ Press the Standby button ① for approx. 2 seconds. The operation indicator ② goes off. The ASA 1 switches to standby mode. Connected antenna boosters are switched off. Connected receivers are switched off, provided that they are powered via the BNC sockets A1 to A4 ⑯.

Disconnecting the ASA 1 from the mains



The Standby button ① only deactivates the supply voltage for the antenna boosters and receivers but does **not** disconnect the ASA 1 from the mains. To disconnect the ASA 1 from the mains:

- ▶ Unplug the mains unit from the wall socket. The operation indicator ② goes off. The ASA 1 is switched off.

Making an 8-channel system using the ASA 1

There are two ways to link two ASA 1 together to create a 1-to-8 diversity splitter:

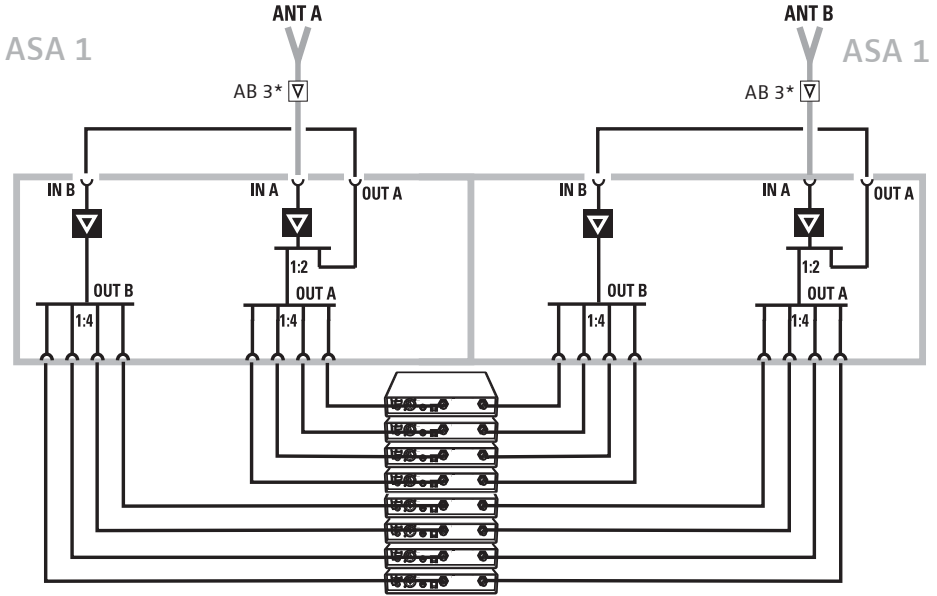
1. Two antennas supply an 8-channel system
2. Two 4-channel systems are linked together

The following table shows the recommended maximum cable lengths and from which cable lengths onwards you should use AB 3 antenna boosters when making an 8-channel system.

Device	Frequency range around	Number of AB 3	Max. cable length	
			RG 58	GZL 5000
ASA 1	500 MHz	0	8 m	16 m
		1	36 m	72 m
		2	64 m	128 m
	700 MHz	0	7 m	14 m
		1	30 m	60 m
		2	53 m	106 m
	900 MHz	0	6 m	12 m
		1	26 m	52 m
		2	46 m	92 m
ASA 1-1G8	1800 MHz	0	4 m	8 m
		1	16 m	36 m
		2	28 m	64 m

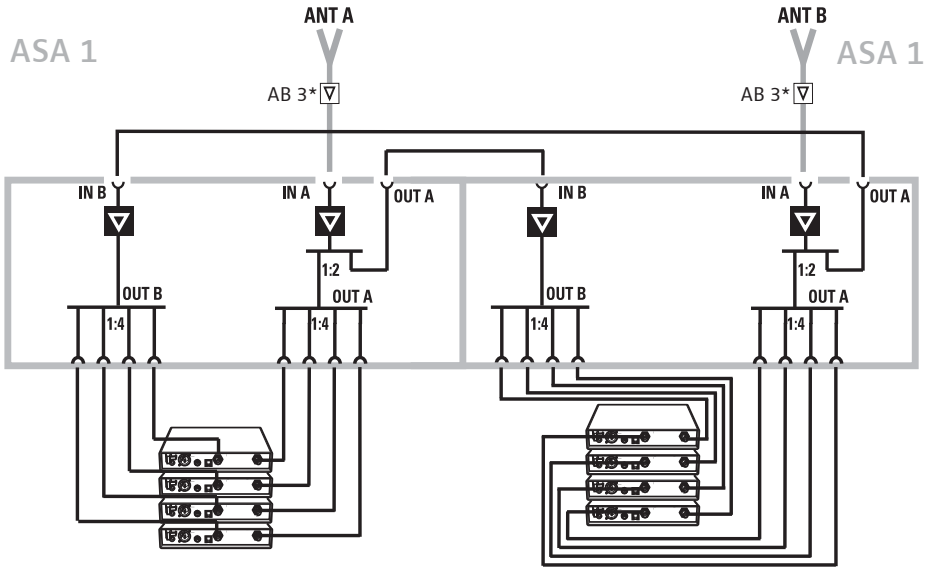
The diagrams on the following two pages show how to connect your ASA 1 antenna splitters to antennas, antenna boosters and receivers.

First possibility: Two antennas supply an 8-channel system



i For information on the number of AB 3 antenna boosters and on the maximum cable lengths, please see table on page 17.

Second possibility: Linking two 4-channel systems



i For information on the number of AB 3 antenna boosters and on the maximum cable lengths, please see table on page 17.

Cleaning the ASA 1

CAUTION

Liquids can damage the electronics of the device!

Liquids entering the housing of the device can cause a short-circuit and damage the electronics.

- ▶ Keep all liquids away from the device.
- ▶ Do not use any solvents or cleansing agents.

-
- ▶ Before cleaning, disconnect the ASA 1 from the mains (see page 16).
 - ▶ Only use a slightly damp cloth to clean the device.

If a problem occurs...

Problem	Possible cause	Possible solution
Receivers cannot be switched on	Receivers are not powered	Check the connections of the NT 1-1 mains unit and/or check the BNC sockets A1 to A4 (16)
Disturbed RF reception	Antennas are not connected correctly	Check the antenna connections (see page 14)
	Wrong combination of ASA 1/ASA 1-1G8 and antenna	Use the correct combination of ASA 1/ASA 1-1G8 and antenna (see table on page 5)
	Connection cables are defective	Replace the connection cables
	Excessive RF signal attenuation due to too long antenna cables or incorrect type of antenna cable	Only use the recommended antenna cables (see page 5) or use shorter antenna cables or use AB-3 antenna boosters from the matching frequency range and connect them the correct way round

If a problem occurs that is not listed in the above table or if the problem cannot be solved with the proposed solutions, please contact your local Sennheiser partner for assistance.

Specifications

ASA 1 antenna splitter	2 x 1:4 or 1 x 1:8, active
Antenna cable	8 items, 50 cm, BNC
Frequency range	ASA 1: 470 to 870 MHz at -3 dB ASA 1-1G8: 1785 to 1805 MHz at -3 dB
Amplification	
In A – Out A	0 ± 1 dB
In A – Out A1 ... A4	0 ± 1 dB
In B – Out B1 ... B4	0 ± 1 dB
IIP3	20 dBm min. 23 dBm typ.
Impedance	50 Ω
Reflection loss	10 dB (all RF outputs)
Operating voltage	13,8 V DC (with NT 1-1 mains unit)
Current consumption	ASA 1: 245 mA ASA 1-1G8: 350 mA
Total current consumption	max. 2.0 A with 4 receivers and 2 x 2 antenna boosters per antenna input
Supply voltage for antenna boosters at ANT RF IN A and ANT RF IN B	12 V, 130 mA
Supply voltage for receivers at A1 to A4	12 V (protected from reverse feed), 350 mA
Relative humidity	5 to 95%
Operating temperature range	-10°C to +55°C
Storage temperature range	-20°C to +70°C
Dimensions of housing	approx. 212 x 168 x 43 mm
Weight	approx. 1090 g

In compliance with

Europe



EMC EN 301489-1/-9
Radio EN 300422-1/-2
Safety EN 60065

USA



CAN ICES-3(B)/NMB-3(B)
47 CFR 15 subpart B (ASA 1 only)

Australia



Manufacturer Declarations

Warranty

Sennheiser electronic GmbH & Co. KG gives a warranty of 24 months on this product.

Additional warranty conditions can be found on our website at www.sennheiser.com under "Service & Support" and "Terms of Warranty".

In compliance with the following requirements

- WEEE Directive (2012/19/EU)



Please dispose of the ASA 1 at the end of its operational lifetime by taking it to your local collection point or recycling center for such equipment.

CE Declaration of Conformity

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- RoHS Directive (2011/65/EU)
- R&TTE Directive (1999/5/EU)

The declaration is available at www.sennheiser.com/download. Before putting the device into operation, please observe the respective country-specific regulations.

FCC

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 class B digital device complies with the Canadian ICES-003.

Changes or modifications made to this equipment not expressly approved by Sennheiser electronic Corp. may void the FCC authorization to operate this equipment. Before putting the device into operation, please observe the respective country-specific regulations!

Radiofrequency radiation exposure information:

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. The ASA 1 should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

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