Bechreibung
Description

Antennenverteiler
Antenna Distributor
AAD 5/4
AAD10/4

DUK-ANTENNEN

2000 SCHENEFELD/HAMBURG · HAUPTSTRASSE 59/61 · TELEPHONE (0 40) 83 90 01-0 · TELETEX 40 34 09 DUK · CABLE DUK HAMBURG
TELEX 2 13 987 DUK D

ANTENNAS MARITIME AND ASHORE
ACTIVE ANTENNAS
ELECTRONIC EQUIPMENT
SPECIAL ANTENNA PLANNING SERVICE

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1. INTRODUCTION

1.1. General Information

The active antenna distributors of serie AAD have been specially designed for our active receiving antenna systems. When using these distributors in conjunction with an active antenna no additional power supply is required, because the necessary operating power for the active antenna is being supplied by the distributor. All technical data published in the data sheets for active receiving antennas remain valid when introducing an active antenna distributor. However, the antenna distributors can also be operated in conjunction with passive receiving antennas (see "Technical Data"). For this operation mode just throw over a switch on the rear panel of the unit.

It is not the purpose of the active antenna distributors to amplify an insufficient low antenna voltage or to improve the sensitivity of a receiver, but to improve the efficiency of antenna systems by multiplex operation. Each of the receivers connected is supplied with the full receiving energy. If more than ten receivers are being connected to one antenna, please, refer to our data sheet DUK 481 ("Antenna Distribution Systems for Reception").

The active antenna distributors are particularly suitable to serve small receiving stations on board of ships as well as fixed and mobile land stations (e.g. in embassies, for police radio, coastal radio, and other stations).

1.2. Important Common Features

a) Frequency range 10 kHz - 30 MHz without switching over

b) Separate, easily interchangeable plug-in circuit boards for each receiving channel

c) It is possible to limit the frequency range by using high - or low pass filters (modification)

d) By integrating an overload protection it is possible to protect the equipment against too high input voltages (modification) N.B.

e) High separation between the various receiver outputs

f) Indicator lamps for the connected active antennas

g) High reliability due to separate amplifiers for each output channel

h) Operation from 110 resp. 220 V ac or 24 V dc sources (automatic switch-over in case of mains failure)

i) Antenna selection either directly at the antenna distributor or from operator's place via remote control units (RCU 1 / RCU 2)

1.3. Description of Types

1.3.1. AAD 4/1

This distributor has one antenna input and four receiver outputs. Its operating frequency range extends from 10 kHz - 30 MHz.

1.3.2. AAD 10/1

This antenna distributor has one antenna input and can be equipped for max. ten receiver outputs within the frequency range from 10 kHz - 30 MHz.

1.3.3. AAD 5/4

Within the frequency range from 10 kHz - 30 MHz a maximum of four antennas and five receivers can be connected to this distributor. Each output channel can be connected to any of the four antenna inputs without affecting the other outputs. The selection of the antenna for a particular output channel can be performed at the distributor or by means of a remote control unit.

1.3.4. AAD 10/4

The same as above for the AAD 5/4 is applicable with the addition that ten instead of five receivers can be connected to this distributor. The channel amplifiers for AAD 5/4 and AAD 10/4 are interchangeable.

1.3.5. AAD 10/VLF

Antenna distributor for the VLF-LF range (10 - 1600 kHz) with one antenna input and max. ten receiver outputs.

1.3.6. AAD 10 M-G

Antenna distributor for 10 kHz - 30 MHz (operating voltage 24 V dc) with one antenna input and max. ten receiver outputs to serve in mobile operation.

2. SPECIFICATIONS

2.1. General Data

	AAD 5/4	AAD 10/4
Over-all dimensions:		
with casing	w505 x h165 x d535	w505 x h165 x d535
slide-in unit	19" 3 pu d460	19" 3 pu d460
Weight:		
incl. casing	21.3 kg	22.8 kg
slide-in unit	13.0 kg	14.5 kg
Power supply	110/115/220/235 V 45 - 60 Hz	110/115/220/235 V 45 - 60 Hz
Power consumption	60 VA	90 VA
Battery supply	20 - 35 V	20 - 35 V
Current consumption	max. 1.0 A	max. 1.7 A
Ambient temperature	- 40° ...60° C	- 40° ...60° C
Shelf temperature range	- 50° ...80° C	- 50° ...80° C
Colour of		
front plate	RAL 7035 SM	RAL 7035 SM
casing	RAL 7030	RAL 7030
Socket system of		
antenna connection	N	N
receiver connection	BNC	BNC
Number of		
antenna inputs	4	4
receiver outputs	max. 5	max. 10

2.2. Technical Data

Input impedance	50 Ohms s ≦ 1.6
Output impedance	50 Ohms s ≦ 1.5
Frequency range	0.01 - 30 MHz
Voltage gain	0 ± 1.5 dB
Noise figure	≦ 9.5 dB
2nd order intermodulation products ($f_1 \pm f_2$) for 2 x 100 mV EMF	≧ 75 dB
3rd order intermodulation products ($2f_1 \pm f_2$) ($f_1 \pm 2f_2$) for 2 x 100 mV EMF	≧ 80 dB

Max. permissible input EMF for 1 dB reduction of amplification	220 V ac / 24 V dc
1 MHz	10.0 V / 6.0 V
10 MHz	6.0 V / 3.0 V
30 MHz	1.6 V / 1.2 V

Cross modulation for 10 % of cross modulation at 30 % modulation of the interfering station	220 V ac / 24 V dc
1 MHz	5.5 V / 3.1 V
10 MHz EMF of interference station	4.8 V / 3.1 V
30 MHz	1.1 V / 0.8 V

Decoupling between two outputs	
1 MHz typ.	> 81 dB
10 MHz typ.	> 66 dB
30 MHz typ.	> 52 dB
Decoupling between output and input	> 100 dB

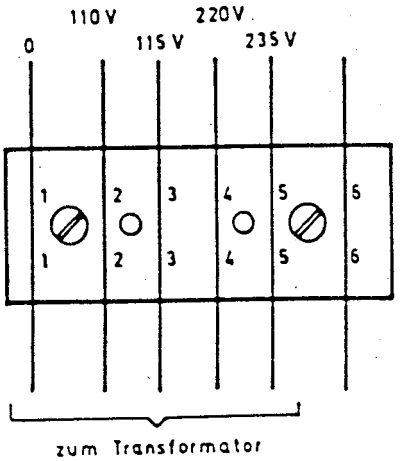
Decoupling between two inputs	
1 MHz typ.	> 62 dB
10 MHz typ.	> 42 dB
30 MHz typ.	> 28 dB

3. FIRST-TIME OPERATION

3.1. Mains Operation

The equipment is being supplied switched to 220 V ac operation. By tapping the transformer the following supply voltages are available:

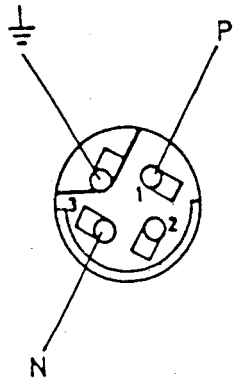
110 V / 115 V / 220 V / 235 V



The electrical values for the mains fuses are 1.0 A for 220 V resp. 235 V, and 2.0 A for 110 V resp. 115 V.

Upon request, the power supply cable is being delivered separately. In such case it will be connected by means of a plug-in connector.

The pins' positions are then as follows:

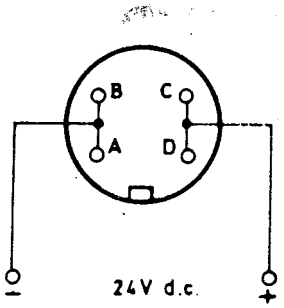


socket
rear view

N + P = 110/220 Vac.

3.2. Battery Operation

If operation out of 24 V dc or in case of mains failure automatic switch-over to battery operation is intended, then the battery junction socket has to be connected to a 24 V (20 - 35 V) battery whereas its negative pole has to be connected to chassis.



socket
rear view

3.3. Grounding

The grounding connector (RF-grounding) at the rear panel should have the shortest possible connection to RF-grounding in order to avoid interferences.

3.4. Antenna Connection

3.4.1. Passive Receiving Antenna

A passive receiving antenna with, if possible, 50 Ohm impedance has to be connected to one of the sockets designated with "antenna". Suitable coaxial cables are RG213U, RG214U or RG58C/U.

ATTENTION:

Take care that the switch S1 at the pre-amplifier cassette is in position "PASSIVE" in order to avoid damages to the antenna and the antenna distributor (39 V dc at antenna connection!).

3.4.2. Active Receiving Antenna

When operating the antenna distributor with an active receiving antenna, e.g. STA 10 A/0.01-30, the switch S1 at the pre-amplifier cassette must be in position "ACTIVE" supplying the operating voltage through the coaxial cable to the active antenna. The switch S1 can be operated through a slot in the rear panel of the antenna distributor.

ATTENTION:

The operating switch S1 as well as the connection of an active antenna may only be performed when the distributor is disconnected from mains.

The coaxial cables as per 3.4.1. are suitable to serve as connection between active antenna and distributor.

3.5. Receiver Connection

The receivers are being connected to the sockets labeled with "receiver". Suitable coaxial cables (50 Ohm) again to be e.g. RG58C/U.

3.6. Fault Indication

Each antenna input disposes of a control LED (light emitting diode) situated on the front panel of the antenna distributor. The lighting indicates that the antenna fuse of the corresponding antenna input is defective. A failure of the antenna fuse can only happen, if the corresponding antenna input is in position "ACTIVE".

A flashing of the LED gives the signal that the HF voltage at the corresponding antenna input has become larger than 10 V and that the overload protection has switched off the antenna input. If the HF voltage drops to a value of below 10 V the antenna input is switched on again and the LED darkens.
(Only at modification with overload protection).