

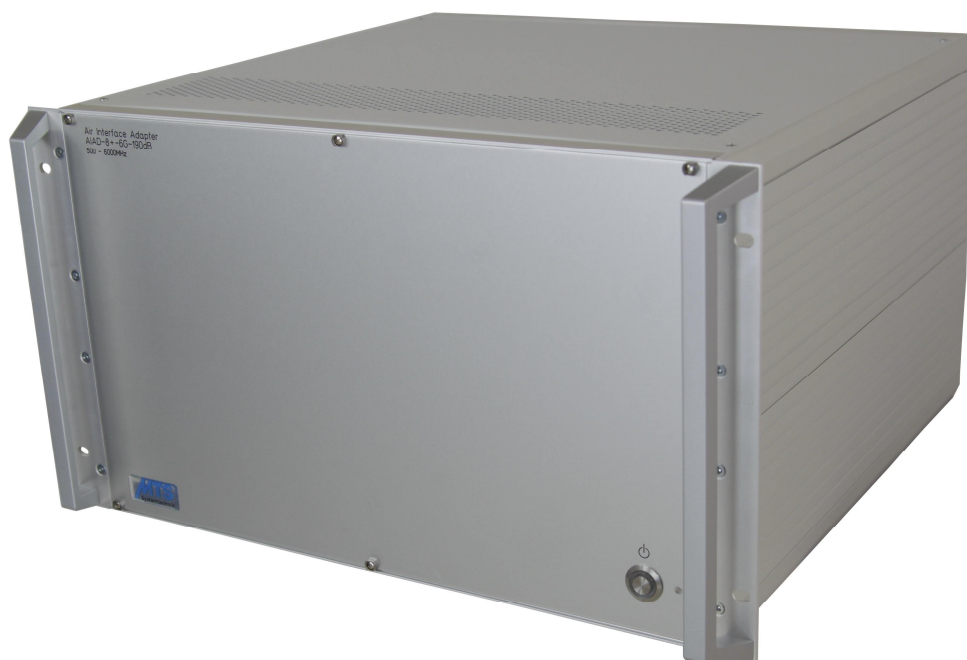
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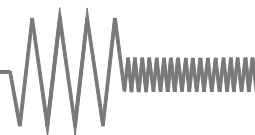
Page 1 from 21

Manual

**Air Interface Adapter
500 MHz – 6000 MHz**

AIAD-8+-6G-190dB





MTS-No.: 27436

Page 2 from 21

Manual

Air Interface Adapter 500 MHz - 6000 MHz AIAD-8+-6G-190dB

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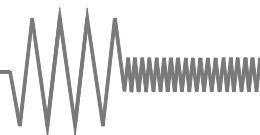
Checked: M. Osenberg

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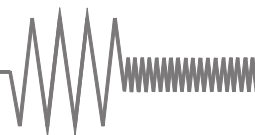


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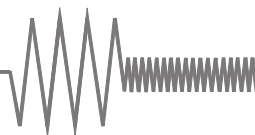
Page 3 from 21

Alteration Chart

Release no.	Version	Unit state	Description of changes	Date	Editor
1	1.0	00	first edition	15 June 2018	Osenberg
2	1.1	00	edition with changed name and changed front page	27 June 2018	Osenberg
3					
4					
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Contents	Page
1 GENERAL	5
1.1 GENERAL DESCRIPTION.....	5
1.2 DELIVERED PARTS	5
1.3 SAFETY PRECAUTIONS.....	5
1.4 COMPONENTS OF THE FRONT PANEL.....	6
1.5 COMPONENTS OF THE REAR PANEL.....	7
1.6 FUNCTIONAL DESCRIPTION	8
1.7 STARTING UP AND OPERATING / CONNECTIONS.....	8
1.8 STARTING UP AND OPERATING / TURNING OFF AND TURNING ON	9
2 CONTROLLING OF THE UNIT	10
2.1 UPDATING THE UNIT	10
2.2 CHANGING LOCAL TO REMOTE.....	10
2.3 THE RS-232-INTERFACE	11
2.4 INTERFACE PROTOCOL RS-232	11
2.5 CONFIGURATION OF THE RS-232-INTERFACE.....	11
2.6 THE ETHERNET-INTERFACE	12
2.7 INTERFACE PROTOCOL ETHERNET	12
2.8 CONFIGURATION OF THE ETHERNET-INTERFACE.....	12
2.9 CONTROL COMMANDS OF THE UNIT.....	14
2.9.1 SET COMMAND	14
2.9.2 CLEAR COMMAND	14
2.9.3 STATUS CHECK	15
2.9.4 IDENT COMMAND	16
2.10 CHARACTERISTICS OF THE REMOTE CONTROLLING AT OCCURRING ERRORS OF COMMANDS	17
3 SERVICE.....	18
3.1 CHANGING FUSE OF 230 V AC SUPPLY.....	18
3.2 CLEANING.....	18
3.3 MAINTENANCE AND REPAIR.....	18
4 TECHNICAL DATA.....	19
5 WARRANTY	20
6 APPENDIX	21



1 GENERAL

1.1 General description

This manual describes the Air Interface Adapter named "AIAD-8+-6G-190dB" unit state 00 and higher.

The Air Interface Adapter consists of variable attenuators, splitters, a power supply and a control card.

The control card BK-AVR2560 interprets the commands from the RS-232-interface and the LAN-interface and controls the attenuators.

1.2 Delivered parts

- Air Interface Adapter
- Power cable
- Operating manual on CD

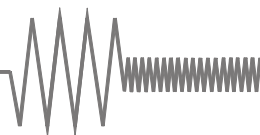
1.3 Safety precautions

During operation of the unit the general safety precautions according to VDE 0100, VDE 0800 and VDE 0805 are to be obeyed.

Attention: In order to avoid touching the voltage loaded parts,
do not open the unit!

Repairs of the device are permitted to authorized personal only.
It is absolutely forbidden to use defective units!

The device must be grounded at all times!



MTS-No.: 27436

Page 6 from 21

1.4 Components of the front panel

- 1 Power switch S1 for 230V AC-supply with integrated control lamp

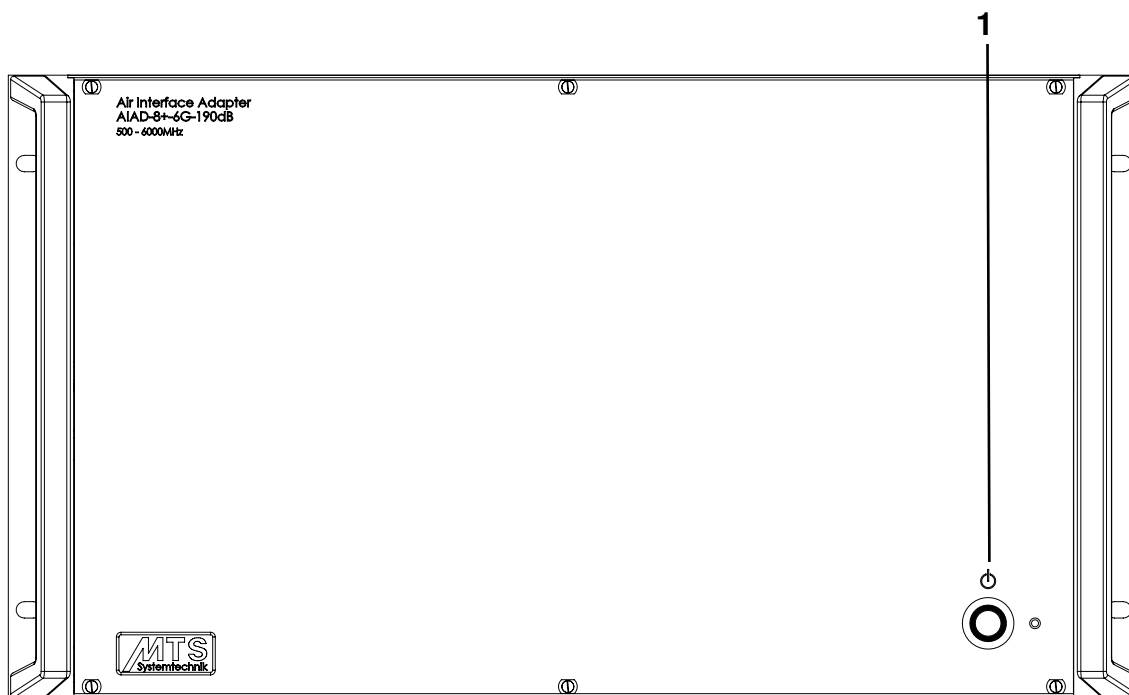


Illustration 1: Front view AIAD-8+-6G-190dB

1.5 Components of the rear panel

- 1 Appliance plug with integrated fuses F1 and F2
- 2 Ground connector
- 3 RF-connections
- 4 Control card BK-AVR2560 with RS-232-interface and LAN-interface

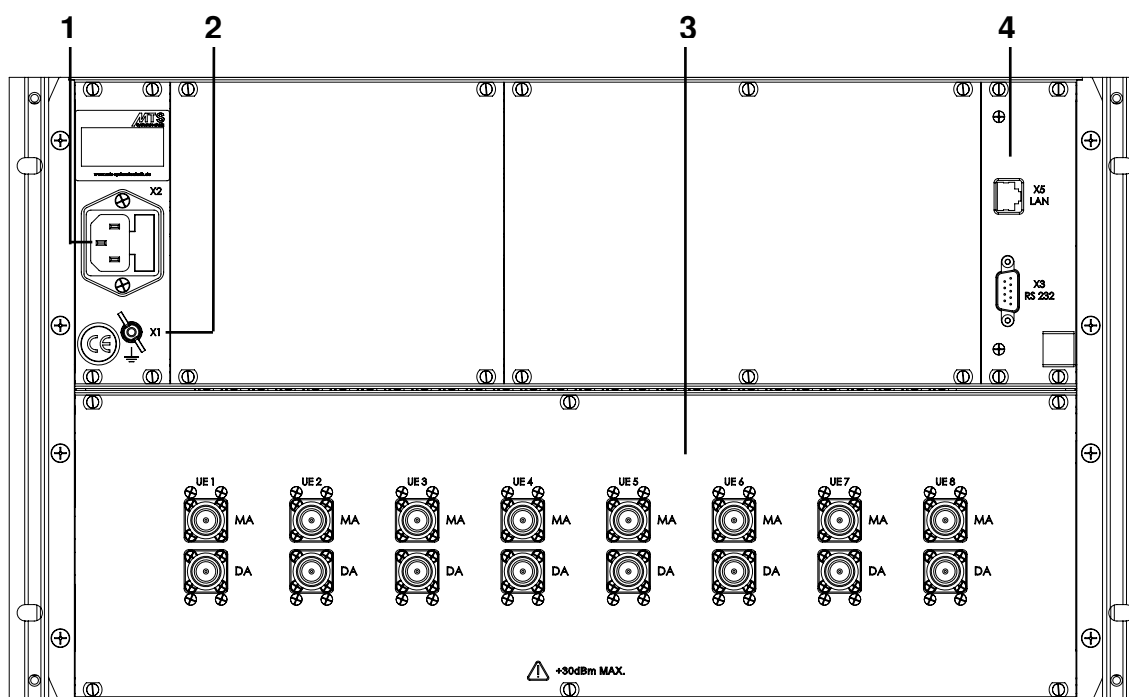
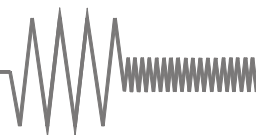


Illustration 2: Rear view AIAD-8+-6G-190dB



1.6 Functional description

The unit is equipped with 28 variable attenuators and 8 combiners / splitters, which are assembled in a ring setup. Therefore each of the eight inputs / outputs is connected via 190 dB programmable attenuators with each other. So it is possible to couple a signal with a defined level to each port.

Additionally the user is able to connect two signals to each port number combined directly.

1.7 Starting up and operating / connections

Before using the unit following connections have to be done:

Ground-connection

The unit has to be grounded expertly at the ground connector (look at illustration 2, position 2). A cable with a conductor cross-section of minimum 1.5 mm² has to be used.

Power supply

The power supply voltage range of the unit is 100 V - 240 V at 50 Hz / 60 Hz at connector X2 (look at illustration 2, position 1).

RF-connections

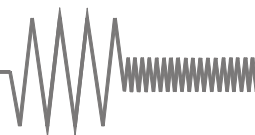
Cables and RF-connectors N-male with an impedance of 50 Ω are required. Cables can be connected without RF-power during the operation.

Interface connection

In order to operate the device by remote control, a data cable has to be connected.

Attention: Before connecting the data cable, the device has to be shut off at power switch S1.

Check all connections for correct hook up, before turning the power on.



1.8 Starting up and operating / turning off and turning on

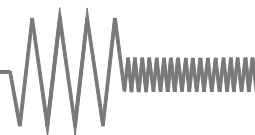
You can do a reset of the unit by switching off the power switch S1 at the front panel. After waiting at least 30 seconds and turning on the unit it will boot again and then it will work normally.

The control card detects voltage errors of the power supplies. While the error is present it is not possible to save any adjustment. At disappearing of a voltage error, the error message changes into a voltage warning. Saving of adjustments is now enabled again. Dependent on the power consumption of the components possibly a voltage error is shown at shutdown.

On starting the unit or returning of power (if the power switch is on) all variable attenuators will switch to 190 dB.

Attention: Before starting make sure the unit is standing safely or is build-in safely.

The operating temperature of the unit has to be between 0 °C and +50 °C.



MTS-No.: 27436

Page 10 from 21

2 CONTROLLING OF THE UNIT

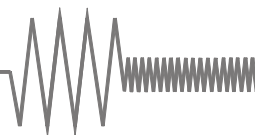
After switching power on, the device automatically starts the operating mode. Now it is possible to control the unit by the RS-232-interface or the Ethernet-interface.

2.1 Updating the unit

The unit consists of a module for updating the firmware. Updating the firmware is exclusively allowed under guidance of MTS Systemtechnik GmbH.

2.2 Changing LOCAL to REMOTE

The unit starts at LOCAL mode. It changes into REMOTE mode automatically when receiving the first REMOTE set command. All REMOTE-interfaces have equal rights. Its commands are executed in the same order as received.



MTS-No.: 27436

Page 11 from 21

2.3 The RS-232-interface

The integrated RS-232-interface is laid out as a 9-pole SUB-D plug. The pins are connected according to RS-232-standard.

A zero modem cable (RX/TX crossed) is required for the connection. The recommended length of the interface cable is 15 m max..

2.4 Interface protocol RS-232

The transmission of data is carried out in ASCII format.

Start command: STX = 0x02H

End command: ETX = 0x03H

Following parameters of the RS-232-interface are fix and can not be changed:

- 8 Databits
- 1 Startbit
- 1 Stopbit
- No parity
- No handshake

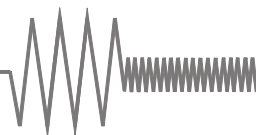
2.5 Configuration of the RS-232-interface

The user can select between three baud rates. Basic setting is 115200 baud.

The baud rate can be set by remote control. At this case the unit changes into remote mode.

Receive string: "ST-BAy"

y is the switched baud rate (9600, 57600 or 115200 in ASCII format).



2.6 The Ethernet-interface

The LAN-interface is laid out as an 8-pole RJ45-female-plug.

2.7 Interface protocol Ethernet

The transmission of data is carried out in ASCII format.

Start command: STX = 0x02H

End command: ETX = 0x03H

The Ethernet-interface is internally connected by RS-232. Following internal parameters are fix and can not be changed:

115200 Baud

8 Databits

1 Startbit

1 Stopbit

No parity

No handshake

2.8 Configuration of the Ethernet-interface

Interface set-up (IP-address, port) can be done by using a webbrowser (e. g. internet explorer) via putting in the IP-address.

Basic setting is TCP-protocol, IP-address "192.168.83.50" and port 4001.

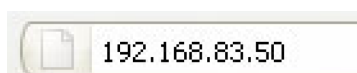


Illustration 3: Insertion of IP-address at browser-window

Attention: The areas of the IP-address must not begin with leading zeros (wrong: 192.168.083.050, right: 192.168.83.50)!

If you can not find your IP-address anymore, look at the tab-button "Setup" or use the DeviceInstaller from Lantronix and search it (search button). By opening the folders the current IP-address will be shown (self-explanatory).

Calling the IP-address through a browser:

After calling the IP-address you can acknowledge the keyword-window without any entries (OK). The configuration window opens automatically as follows.

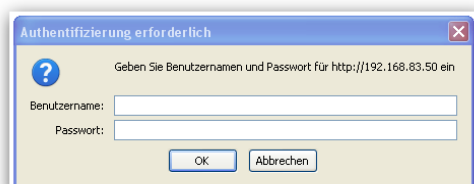


Illustration 4: Keyword-window of the LAN-module

Adjusting the IP-address through a browser:

You can adjust the IP-address in the following window. Alternatively, you can select "Obtain IP address automatically" to work with DHCP-mode.

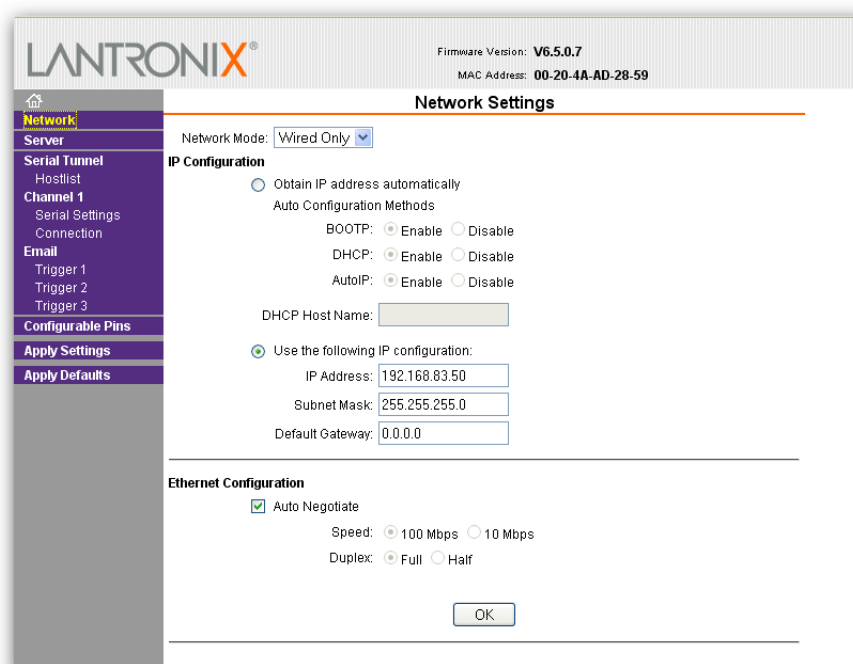
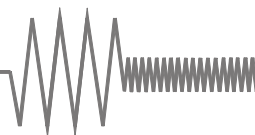


Illustration 5: Adjustment of IP-address of the LAN-module

Attention: After changes you have to press OK and then you have to execute Apply Settings!

Executing further operations:

To do extended operations use the document Extended_Configuration_XPORT_Module on the CD of the unit.



MTS-No.: 27436

Page 14 from 21

2.9 Control commands of the unit

All REMOTE-interfaces have equal rights. Its commands are executed in the same order as received.

2.9.1 Set command

Receive string: "**AxPy**"

e. g. receive string: "A12P1A13P1"

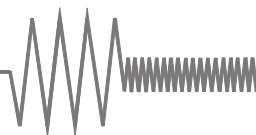
"**AxPy**": **x** is the number of the variable attenuator
(described at the block diagram in ASCII format).
y is the switched position of the variable attenuator
(0 – 190 in ASCII format).

It is possible to control several attenuators with one receive string.

2.9.2 Clear command

Receive string: "C"

With the clear command all variable attenuators are set to 190 dB.



2.9.3 Status check

After one of the following commands was received, the unit sends a string with the state of its components.

Receive string: "ST", "ST1" or "ST2"

Send string: " A12P y_{12} A13P y_{13} ... A78P y_{78} ERR v **MOD**" (ERR v only at "ST1" or "ST2")

y is the switched position of the variable attenuator
(0 – 190 in ASCII format).

v is the error state of the unit, which is just displayed at receive string "ST1" or "ST2" (value is 0 – 2 in ASCII format, 0 means no error has occurred, 1 means voltage error is active (1 possibly occurs at shutdown of the unit but not assured), 2 means voltage warning after voltage error has disappeared, 2 can not be displayed at "ST2" because it is reset by "ST2" before answering, resetting 2 by "ST2" sets the unit to remote mode, 2 is reset by resetting the unit, too).

MOD is the working mode of the unit (LOC means LOCAL, REM means REMOTE).

This string begins with the start command and ends with the end command.

After one of the following commands was received, the unit sends the corresponding string with the state of the according interface.

Receive string: "ST-BA"

Send string: "ST-BA y "

y is the baud rate in ASCII format (9600, 57600, 115200).

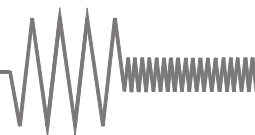
This string begins with the start command and ends with the end command.

Receive string: "ST-IP"

Send string: "ST-IP y "

y is the IP-address in ASCII format (e. g. 192.168.83.50), which was read at the last booting of the unit. If the LAN-module has not offered the address the unit answers "ST-IP Reading Error" at this request.

This string begins with the start command and ends with the end command.



MTS-No.: 27436

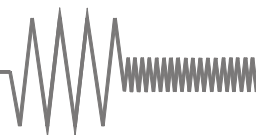
Page 16 from 21

2.9.4 Ident command

Receive string: `"*IDN?"`

After sending the ident command the device answers with the device-identifier.

The device-identifier begins with the start command and ends with the end command.



2.10 Characteristics of the remote controlling at occurring errors of commands

Attention: It is absolutely recommended to send not more than eight Receive Strings by one command (without STX and ETX between the Strings). The whole string has to be defined by STX at the start and ETX at the end.

One command is executed when the first sign of the next component or the end command is received correctly.

Once the unit detects a wrong syntax of a command, it breaks interpreting commands and starts again at the next detected start command.

At set commands beside the syntax, the numbering is checked, too. Are components to be set, which do not exist, the unit breaks the command and starts the analysis again at a detected start command. Are not existing positions of the selected component to be set, the unit breaks the command and starts the analysis again at a detected start command.

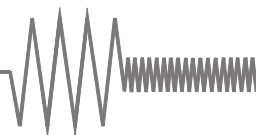
STX and ETX are shown in following cases, too:

Correct string: "[02H]A12P2A13P1A14P0[03H]"
Reaction: Three attenuators are set.

Incorrect string: "[02H]A12P2A13P**200**A14P0[03H]" "[02H]A15P1[03H]"
Reaction: Attenuator 12 is set, attenuator 13 and 14 are not set because position 200 does not exist. Attenuator 15 is set, because a new command has been started.

Incorrect string: "[02H]A12P2A**70**P1A13P0[03H]" "[02H]A15P1[03H]"
Reaction: Attenuator 12 is set, attenuator 70 and 13 are not set because attenuator 70 does not exist. Attenuator 15 is set, because a new command has been started.

Incorrect string: "[02H]A12P2**Z2**P1A13P0[03H]" "[02H]A14P1[03H]"
Reaction: Attenuator 12 is not set, because an unknown identifier is detected before the command is finished by ETX or the start of the next command. Z2P1 is an unknown component and attenuator 13 is not set. Attenuator 14 is set, because a new command has been started.



MTS-No.: 27436

Page 18 from 21

3 SERVICE

3.1 Changing fuse of 230 V AC supply

Inside of the appliance plug there are the fuses F1 and F2. Defective fuses have to be changed by fuses of the same type. Pull out the fuse holder at zero-current-unit (power cable removed) to get access to the fuses.

Attention: To change fuses, first switch off power at power switch S1 **a n d** remove the power cable!

Defective fuses have to be replaced by new fuses of the following type!
F1, F2 = T3.15/250 (3.15 A, 250 V AC, slow blow)

3.2 Cleaning

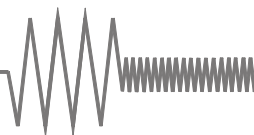
Maintenance work essentially only includes the cleaning of the unit.
Inform competent authorized personnel if damages are determined.

Attention: To clean the unit, first switch off power at power switch S1 **a n d** remove the power cable!
Depending on the degree of contamination, the unit has to be cleaned with a lint-free, soft and dry cloth or brush. Do not use cleaning liquids except for mild detergents (moisten cloth) for cleaning!

3.3 Maintenance and repair

No regular maintenance check for the unit is required.
Checking the unit is done by calibration.

During the warranty period only the manufacturer is authorized to repair the unit.

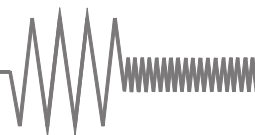


MTS-No.: 27436

Page 19 from 21

4 TECHNICAL DATA

Technical data are shown on the specification sheet in the appendix.



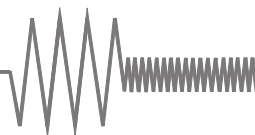
MTS-No.: 27436

Page 20 from 21

5 WARRANTY

The "General Terms and Conditions for Delivery and Payment of MTS Systemtechnik GmbH" or agreed warranty terms are applicable.

There will be no warranty for damages caused by improper handling, improper operation, technical changes, maintenance or physical damages, if these damages were not caused by MTS Systemtechnik GmbH.



MTS-No.: 27436

Page 21 from 21

6 APPENDIX

Is the manual delivered as CD, you can find the separate files of appendix as pdf on the CD.

Annex 1 Specification for the Attenuator Unit AIAD-8+-6G-190dB

Annex 2 Block diagram for the Attenuator Unit AIAD-8+-6G-190dB

Annex 3 EC-Declaration of conformity for the Attenuator Unit AIAD-8+-6G-190dB

Annex 4 Extended_Configuration_XPORT_Modul