

Attenuator Unit PAH-4000x4/LT2x2

MTS-No.: 69.00.0340

Application

With this Attenuator Unit it is possible to test mobile communication equipment. It can be used for example for emulating the air interface.

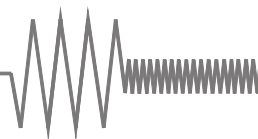
Description

This Attenuator Unit is equipped with 4 signal inputs and 2 signal outputs. Each 2 signals are attenuated by programmable attenuators model PAH-4000 and are combined to 1 output. The unit can be controlled by IEEE488, RS-232 or optional LAN-interface.



Characteristics

- ▶ Usable for all frequencies between 800 MHz and 2900 MHz, such as GSM / DCS / DECT / UMTS etc.
- ▶ 4 Signal inputs and 2 signal outputs. Each 2 signals are attenuated by programmable attenuators and combined to 1 output
- ▶ Attenuation range from 0 dB to 93 dB in 1 dB steps
- ▶ Controlled by IEEE488 and RS-232
- ▶ As option LAN-interface
- ▶ Optional: interfaces and connectors to customers specifications
- ▶ Attenuator Units can be designed according to customers individual requirements



Attenuator Unit PAH-4000x4/LT2x2

MTS-No.: 69.00.0340

Configuration:

2x paths with each 2 pcs. programmable attenuators PAH-4000 and 1 power divider LT2

Technical data:

1 RF-specifications:

1.1 Impedance	50 Ω
1.2 Input power	+26 dBm max.
1.3 Frequency range	800 MHz to 2900 MHz
1.4 RF-connections	N female
1.5 Switching time	50 ms max.
1.6 VSWR	2 : 1 typ.
1.7 Insertion loss	10 dB typ.
1.8 Attenuation	0 – 93 dB in 1 dB steps
1.9 Gradation	1 dB / 2 dB / 4 dB / 8 dB / 16 dB / 16 dB / 16 dB /30 dB
1.10 Setting accuracy	1 dB – 23 dB: $\pm 0,3$ dB +5% of the attenuation value 24 dB – 93 dB: $\pm 0,5$ dB +10% of the attenuation value

2 Connections:

2.1 Front side	Power supply switch with integrated control lamp RF-connections
2.2 Rear side	Power supply Control card Appliance plug with the integrated fuses F1 and F2 Ground connector Control interfaces

3 General specifications:

3.1 Power supply	230 V + 6%/-10% 47... 63 Hz
3.2 Internal voltage	5 V DC
3.3 Control displays	Control lamp in power switch Control LED for 5 V DC at the power supply unit

3.4 Control interfaces	IEEE488 RS-232
3.5 Power consumption primarily	16 mA
3.6 Voltage supply	Standard rubber connector
3.7 Operating temperature	0 °C to +50 °C
3.8 Reference temperature for specifications	+25 °C
3.9 Dimensions	19"-unit x 3 HU x 320 mm (dimensions without handles and connections)
3.10 Colour	Front side: colourless anodized Rear side: colourless anodized
3.11 Weight	6,4 kg

4 Delivered parts:

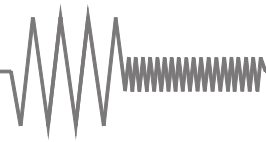
PAH-4000x4/LT2x2
Power cable
Operating manual (on CD)

5 Comments:

Warranty	12 months
RoHS-compliant	No

6 Recommended accessories:

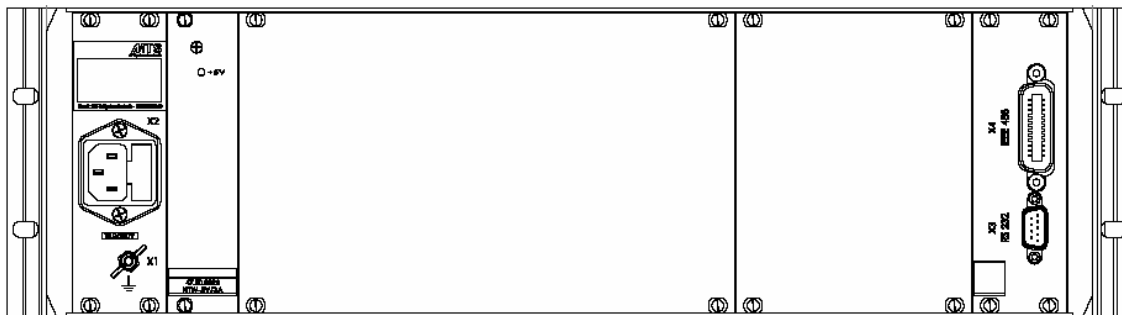
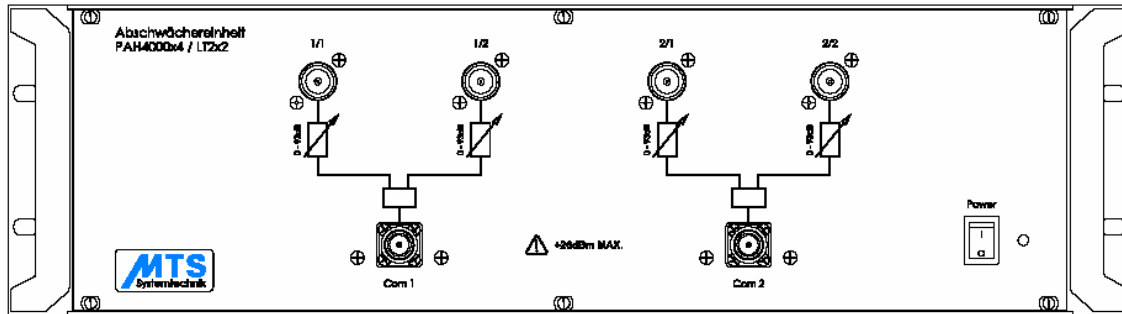
Shielding box of the
series MSB-02xx
RF-cables

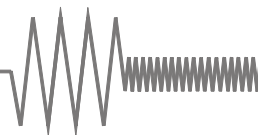


Attenuator Unit PAH-4000x4/LT2x2

MTS-No.: 69.00.0340

Views:





Attenuator Unit PAH-8000x3/LT4

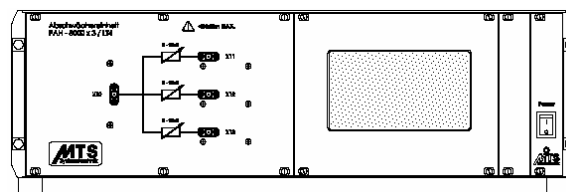
MTS-No.: 69.00.0410

Application

With this Attenuator Unit it is possible to test mobile communication equipment. It can be used for example for emulating the air interface.

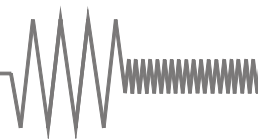
Description

This Attenuator Unit is equipped with 3 programmable attenuators model PAH-8000/93 which are combined to one output. The unit can be controlled by IEEE488, RS-232 or LAN-interface. A manual control with touch panel is included.



Characteristics

- ▶ Usable for all frequencies between 400 MHz and 2900 MHz, such as GSM / DCS / DECT / UMTS etc.
- ▶ 3 Programmable attenuators combined to 1 output
- ▶ Attenuation range from 0 dB to 93 dB in 1 dB steps
- ▶ Controlled by IEEE488, RS-232 or LAN-interface
- ▶ Manual control with touch panel
- ▶ Optional: interfaces and connectors to customer's specifications
- ▶ Attenuator Units can be designed according to customer's individual requirements



Attenuator Unit PAH-8000x3/LT4

MTS-No.: 69.00.0410

Configuration:

3 pcs. programmable attenuators PAH-8000 and 1 power divider LT4

Technical data:

1 RF-specifications:

1.1 Impedance	50 Ω
1.2 Input power	+24 dBm max.
1.3 Frequency range	400 MHz – 2900 MHz
1.4 RF-connections	SMA female
1.5 Switching time	50 ms max.
1.6 VSWR In	2,0 : 1 max.
1.7 VSWR Out	2,0 : 1 max.
1.8 Isolation	On request
1.9 Insertion loss	15 dB max. from X10 to X11,X12, X13 (at 0 dB attenuation)
1.10 Attenuation	0 dB – 93 dB in 1 dB steps
1.11 Gradation	1 dB / 2 dB / 4 dB / 8 dB / 16 dB / 30 dB / 32 dB
1.12 Setting accuracy 400 – 2900 MHz	1 dB - 29 dB ±1,5 dB 30 dB - 79 dB ±3,0 dB 80 dB - 93 dB ±6,0 dB

2 Connections:

2.1 Front side	Power supply switch with integrated control lamp RF-connections
2.2 Rear side	Power supply Control card Appliance plug with the integrated fuses F1 and F2 Ground connector Control interfaces

3 General specifications:

3.1 Power supply	100 V – 240 V 50 Hz / 60 Hz
3.2 Internal voltage	5 V DC
3.3 Control displays	Control lamp in power switch Control LED for 5 V DC at the power supply unit

3.4 Control interfaces	Manual control (touch panel) IEEE488 LAN RS-232
3.5 Power consumption primarily	0,1 A @ 230 V
3.6 Voltage supply	Standard rubber connector
3.7 Operating temperature	0 °C to +50 °C
3.8 Reference temperature for specifications	+25 °C
3.9 Dimensions	19"-unit x 3 HU x 425 mm (dimensions without handles and connections)
3.10 Colour	Front side: colourless anodized Rear side: colourless anodized
3.11 Weight	5,8 kg

4 Delivered parts:

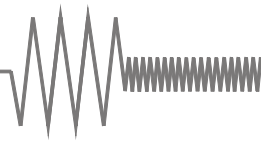
PAH-8000x3/LT4
Power cable
Operating manual (on CD)

5 Comments:

Warranty	12 months
RoHS-compliant	Yes

6 Recommended accessories:

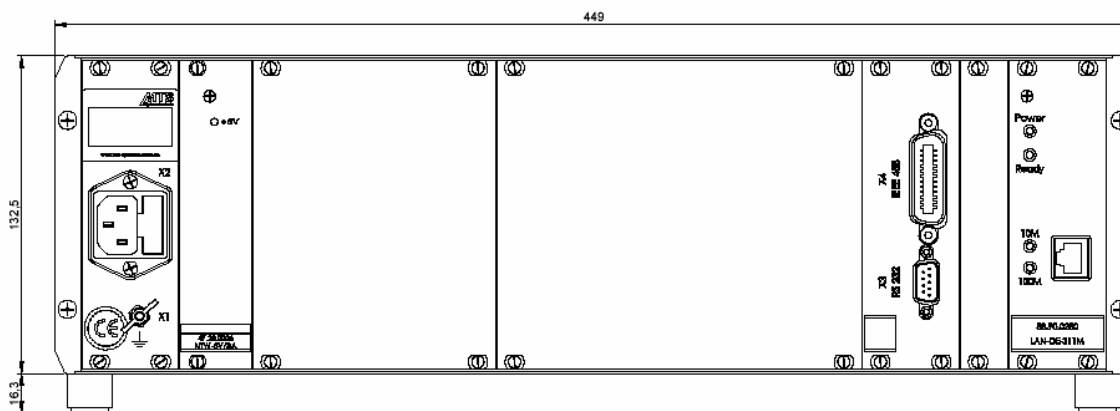
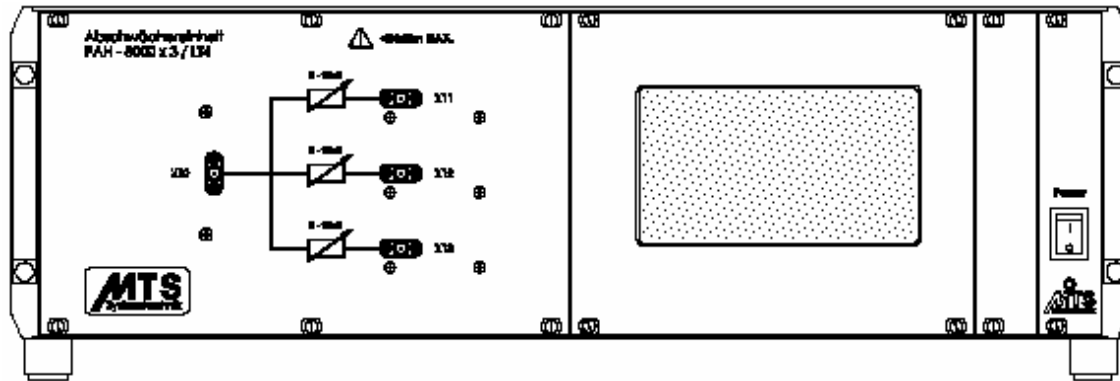
Shielding box of the
series MSB-02xx
RF-cables

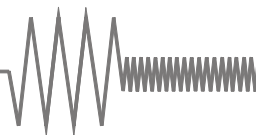


Attenuator Unit PAH-8000x3/LT4

MTS-No.: 69.00.0410

Views:





Attenuator Unit PAH-4000/93-8

MTS-No.: 69.00.0320

Application

With this Attenuator Unit it is possible to test mobile communication equipment. It can be used to balance the different signal levels or to emulate the air interface. A controllable signal attenuator is built in between each input and output.

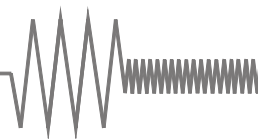
Description

Attenuator Unit with 8 programmable attenuators model PAH-4000/93 controlled by up/down buttons, RS-232 interface and IEEE488. Each input is wired via a programmable attenuator to one output.



Characteristics

- ▶ Usable for all frequencies between 800 MHz and 3000 MHz, such as GSM / DCS / DECT / UMTS etc.
- ▶ 8 Programmable attenuators
- ▶ Attenuation range from 0 dB to 93 dB in 1 dB steps
- ▶ Separate indication with 3x7-segment display for number (one-digit) and for adjustment (two-digit) of the selected attenuator
- ▶ Up/down buttons for manual control
- ▶ Controlled by IEEE488 and RS-interface
- ▶ Optional: interfaces (LAN, USB etc.) and connectors to customers specifications
- ▶ 800 MHz to 4000 MHz or up to 8000 MHz possible with reduced specs
- ▶ Windows operating software on demand
- ▶ Attenuator Units can be designed according to customers individual requirements



Attenuator Unit PAH-4000/93-8

MTS-No.: 69.00.0320

Configuration:

8 pcs. attenuators model PAH-4000/93

Technical data:

1 RF-specifications:

1.1 Impedance	50 Ω
1.2 Input power	+26 dBm max.
1.3 Frequency range	800 MHz – 3000 MHz (800 MHz – 4000 MHz or up to 8000 MHz possible with reduced specs.)
1.4 RF-connections	N female
1.5 Switching time	50 ms max.
1.6 VSWR In	1,8 : 1 max.
1.7 VSWR Out	1,8 : 1 max.
1.8 Insertion loss	7,5 dB typ., 8,5 dB max.
1.9 Attenuation	0 dB – 93 dB in 1dB steps
1.10 Gradation	1 dB / 2 dB / 4 dB / 8 dB / 16 dB / 16 dB / 16 dB / 30 dB (0,5 dB steps on request)
1.11 Setting accuracy at 1 dB steps	1 dB – 23 dB: \pm (0,3 dB + 5% of the attenuation value) 24 – 93 dB: \pm (0,5 dB + 10% of the attenuation value)

2 Connections:

2.1 Front side	Power supply switch with integrated control lamp RF-connections 3x7-segment display with up/down pushbuttons
2.2 Rear side	Power supply Control card Appliance plug with the integrated fuses F1 and F2 Ground connector

3 General specifications:

3.1 Power supply	100 V – 240 V 50 Hz / 60 Hz
3.2 Internal voltage	5 V DC
3.3 Control displays	Control lamp in power switch 3x7-segment for attenuator number and attenuator adjustment

3.4 Control interfaces	Manual control (up/down buttons) IEEE488 RS-232
3.5 Power consumption primarily	0,03 A nominal @ 230 V
3.6 Voltage supply	Standard rubber connector
3.7 Operating temperature	0 °C to +50 °C
3.8 Reference temperature for specifications	+25 °C
3.9 Dimensions	19"-unit x 2 HU x 350 mm (dimensions without handles and connections)
3.10 Colour	Front side: colourless anodized Rear side: yellow chromated
3.11 Weight	6,0 kg

4 Delivered parts:

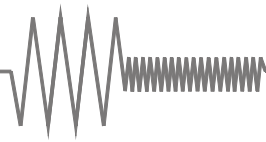
PAH-4000/93-8
Power cable
Operating manual (on CD)

5 Comments:

Warranty	12 months
RoHS-compliant	Yes

6 Recommended accessories:

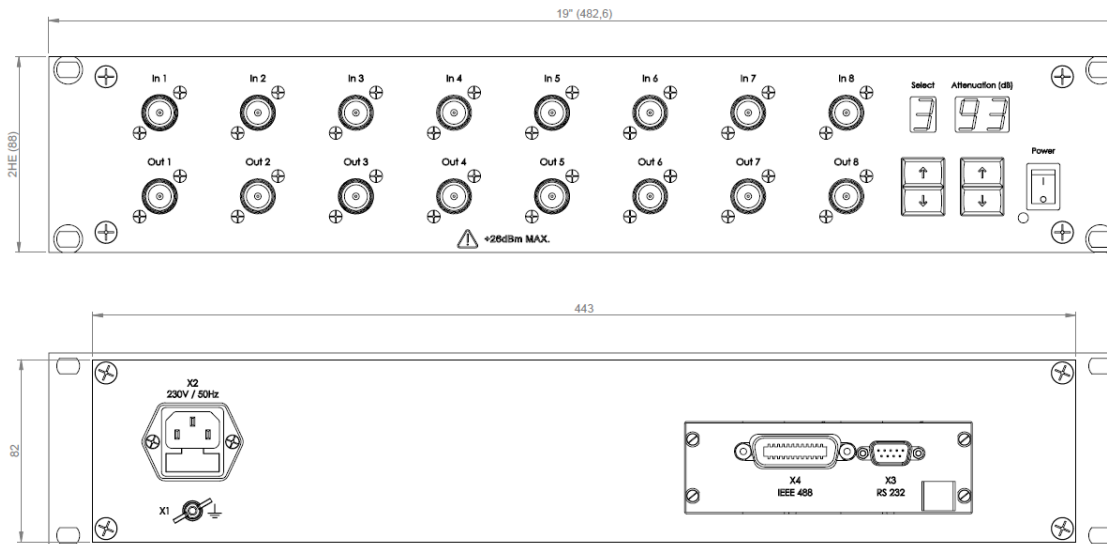
Shielding box of the
series MSB-02xx
RF-cables

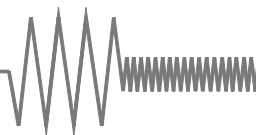


Attenuator Unit PAH-4000/93-8

MTS-No.: 69.00.0320

Views:





Attenuator Unit PAH-4000/93-2

MTS-No.: 69.00.0330

Application

With this Attenuator Unit it is possible to test mobile communication equipment. It can be used for example for emulating the air interface.

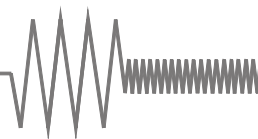
Description

This Attenuator Unit is equipped with 2 programmable attenuators model PAH-4000/93 with N-connectors. The unit can be controlled by IEEE488, RS-232 or optional LAN-interface. A manual control with touch panel display is included.



Characteristics

- ▶ Usable for all frequencies between 200 MHz and 4000 MHz, such as GSM / DCS / DECT / UMTS etc.
- ▶ 2 Programmable attenuators
- ▶ Attenuation range from 0 dB to 93 dB in 1 dB steps
- ▶ Controlled by IEEE488 and RS-232
- ▶ Manual control with touch panel display
- ▶ Attenuator Unit with LAN-interface see 69.00.0331 PAH-4000/93-2LAN
- ▶ Optional: interfaces and connectors to customers specifications.
- ▶ Attenuator Units can be designed according to customers individual requirements.



Attenuator Unit PAH-4000/93-2

MTS-No.: 69.00.0330

Configuration:

2 pcs. programmable attenuators PAH-4000/93

Technical data:

1 RF-specifications:

1.1 Impedance	50 Ω
1.2 Input power	+26 dBm max.
1.3 Frequency range	200 MHz - 4000 MHz
1.4 RF-connections	N female
1.5 Switching time	50 ms max.
1.6 VSWR	2,6 : 1 max.
1.7 Insertion loss	9,5 dB max.
1.8 Attenuation	0 dB – 93 dB in 1 dB steps
1.9 Gradation	1 dB / 2 dB / 4 dB / 8 dB / 16 dB / 16 dB / 16 dB / 30 dB (0,5 dB steps on request)
1.10 Setting accuracy	1 dB - 23 dB: ±0,3 dB +5% of the attenuation value 24 dB - 93 dB: ±0,5 dB +10% of the attenuation value

2 Connections:

2.1 Front side	Power supply switch with integrated control lamp RF-connections
2.2 Rear side	Power supply Control card Appliance plug with the integrated fuses F1 and F2 Ground connector Control interfaces

3 General specifications:

3.1 Power supply	100 V – 240 V 47 Hz / 63 Hz
3.2 Internal voltage	5 V DC
3.3 Control displays	Control lamp in power switch Control LED for 5 V DC at the power supply unit

3.4 Control interfaces	Manual control (touch panel) IEEE488 RS-232 LAN (optional)
3.5 Power consumption primarily	40 mA
3.6 Voltage supply	Standard rubber connector
3.7 Operating temperature	0 °C to +50 °C
3.8 Reference temperature for specifications	+25 °C
3.9 Dimensions	19"-unit x 3 HU x 320 mm (dimensions without handles and connections)
3.10 Colour	Front side: colourless anodized Rear side: colourless anodized
3.11 Weight	5,3 kg

4 Delivered parts:

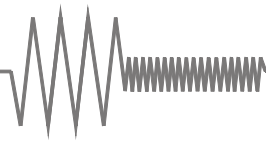
PAH-4000/93-2
Power cable
Operating manual (on CD)

5 Comments:

Warranty	12 months
RoHS-compliant	Yes

6 Recommended accessories:

Shielding box of the
series MSB-02xx
RF-cables

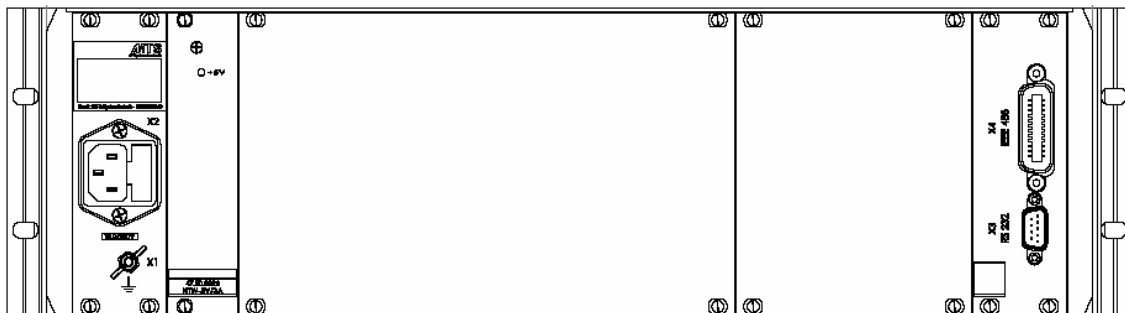
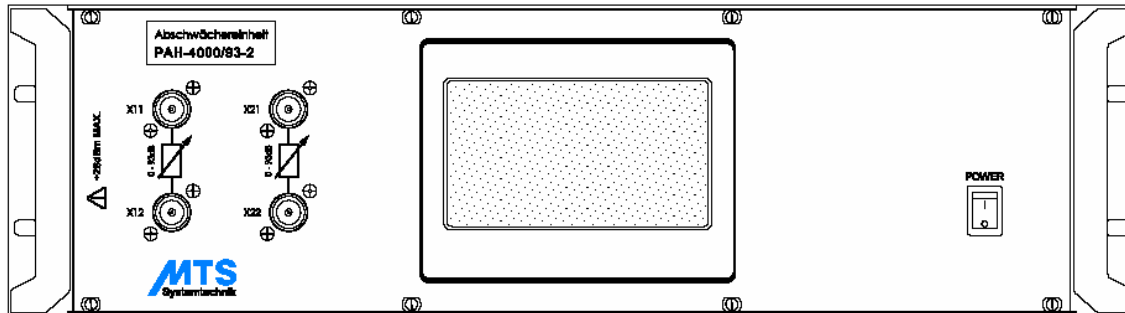


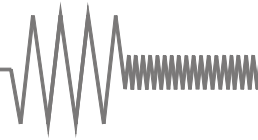
Attenuator Unit PAH-4000/93-2

MTS-No.: 69.00.0330

Views:

69.00.0330 PAH-4000/93: front and rear view



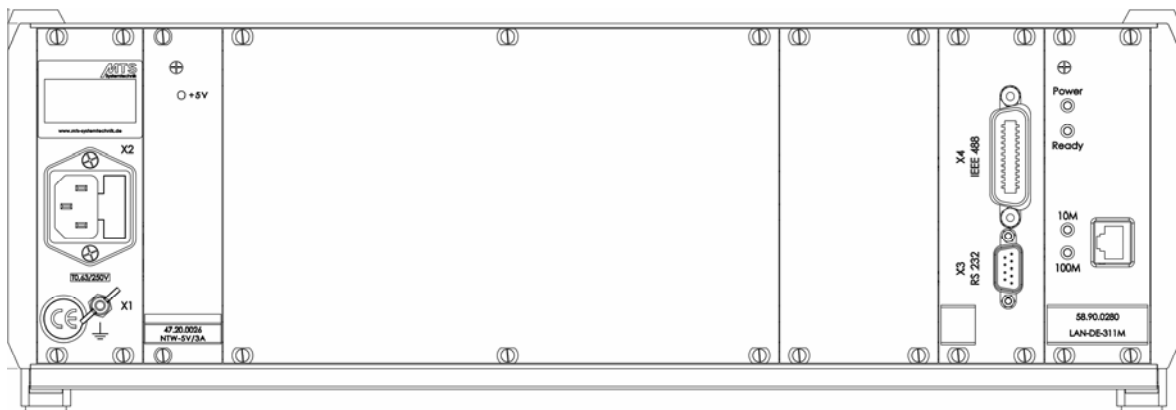
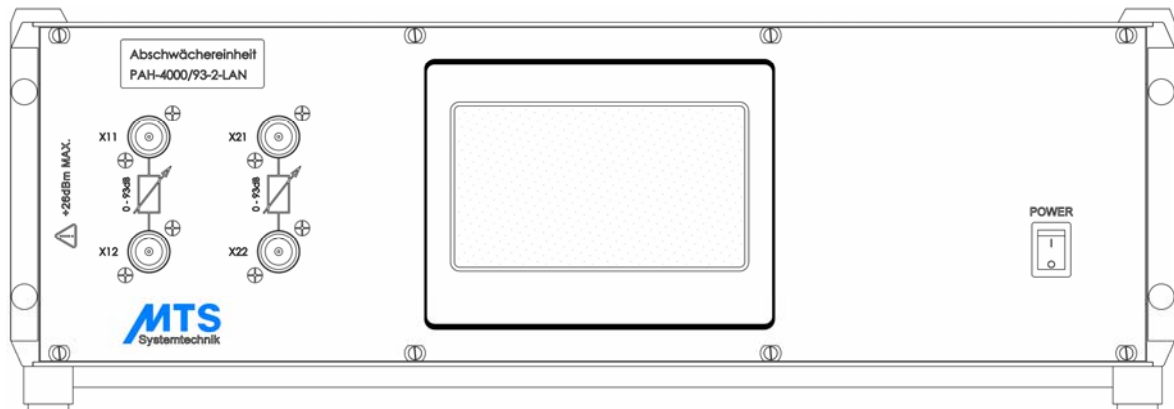


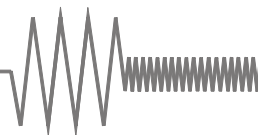
Attenuator Unit PAH-4000/93-2

MTS-No.: 69.00.0330

Views:

69.00.0331 PAH-4000/93LAN: front and rear view





Step Attenuator Unit ELTG-4000/55-8

MTS-No.: R69.00.0430

Application

Step Attenuator Units are required to perform high precision measurements of gain, attenuation or linearity in a very wide RF frequency range and with steady impedance.

Description

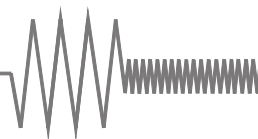
The MTS Step Attenuator Unit ELTG-4000/55-8 offers 8 attenuators that can be used in the range from 500 MHz to 4000 MHz. The attenuation can be changed in steps of 0,1 dB from 10 dB up to 65 dB by entry of relative or absolute values. To achieve high accuracy, optimized settings of the internal attenuation cascades are stored in 25 MHz steps for the whole frequency and attenuation range.

In the same case are two passive modules arranged for signal connections via patch cables: 3x splitters 1 to 4 and 4x hybrid couplers.



Characteristics

- ▶ Configuration: 8x attenuation lines, 3x splitters/combiners, 4x hybrid couplers
- ▶ Attenuation in steps of 0,1 dB
- ▶ Easy manually operation with touchpanel display
- ▶ Large frequency range from 500 MHz to 4000 MHz.
- ▶ High accuracy due to internal correction in 25 MHz steps
- ▶ Attenuation range from 10 dB to 65 dB
- ▶ High isolation >100 dB
- ▶ Control by RS-232 and LAN (other interfaces on demand)
- ▶ Manual control with touch panel display
- ▶ Input power up to 2W cw at 25 °C
- ▶ High switching reliability
- ▶ Economic and modular design (8 attenuator paths as standard)
- ▶ High quality materials and components for extended durability
- ▶ Step Attenuator Units can be designed according to customers individual requirements.



Step Attenuator Unit ELTG-4000/55-8

MTS-No.: R69.00.0430

Configuration:

8x Attenuation lines, 3x splitters/combiners, 4x hybrid couplers

Technical data:

1 RF-specifications attenuation lines:

1.1 Impedance	50 Ω
1.2 Input power	2 W Avg. @ 25 °C, derating 0,015 W/°C
1.3 Frequency range	500 MHz – 4000 MHz
1.4 RF-connections	N female
1.5 VSWR In / Out	2 : 1 max.
1.6 Isolation (between the attenuation lines)	100 dB
1.7 Insertion loss	10 dB @ 10 dB setting
1.8 Attenuation incl. insertion loss	10 dB – 65 dB
1.9 Gradation	0,1 dB
1.10 Setting accuracy	\pm (0,8 dB + 1,5 %)
1.11 Temperature dependency	\pm 0,02 dB / °C
1.12 Calibration time	12 months

2 RF-specifications splitters / combiner:

2.1 Impedance	50 Ω
2.2 Input power (used as divider, with load VSWR < 1,2 : 1)	10 W Avg. @ 25 °C
2.3 Frequency range	800 MHz – 2500 MHz
2.4 RF-connections	N female
2.5 VSWR In / Out	1,4 : 1 max.
2.6 Isolation	20 dB min.
2.7 Insertion loss	7,5 dB max.

3 RF-specifications hybrid couplers:

3.1 Impedance	50 Ω
3.2 Input power	160 W Avg., 1,5 kW power peak
3.3 Frequency range	700 MHz – 2700 MHz
3.4 RF-connections	N female
3.5 VSWR In/Out	1,2 : 1 max.

3.6 Isolation	25 dB min.
3.7 Coupling loss	4,5 dB max.

4 Connections:

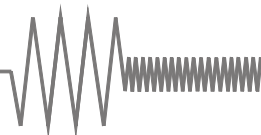
4.1 Front side	Display with touch panel On/off switch RF-connections for input power splitters, attenuation lines, hybrid couplers and output combiner
4.2 Rear side	Appliance plug, Fuses F1 and F2 Ground connector Control interfaces

5 General specifications:

5.1 Power supply	100 V – 240 V, 50 Hz / 60 Hz
5.2 Internal voltage	5 V DC / +12 V DC / +28 V DC
5.3 Control displays	Lighted display
5.4 Control interfaces	LAN RS-232
5.5 Power consumption primarily	300 mA max. @ 230 V (no relay switched) 2 A max. @ 230 V (all relays switched)
5.6 Voltage supply	Standard rubber connector
5.7 Operating temperature	+10 °C – +30 °C
5.8 Reference temperature for specifications	+25 °C
5.9 Dimensions	Desktop unit 84 TE x 14 HU x depth 550 mm (dimensions without handles and connections)
5.10 Colour	Front side colourless anodized Rear side colourless anodized
5.11 Weight	41,2 kg

6 Delivered parts:

Step Attenuator Unit
Power cable
20 x RF-cables (for patching)
Operating manual (on CD)



Step Attenuator Unit ELTG-4000/55-8

MTS-No.: R69.00.0430

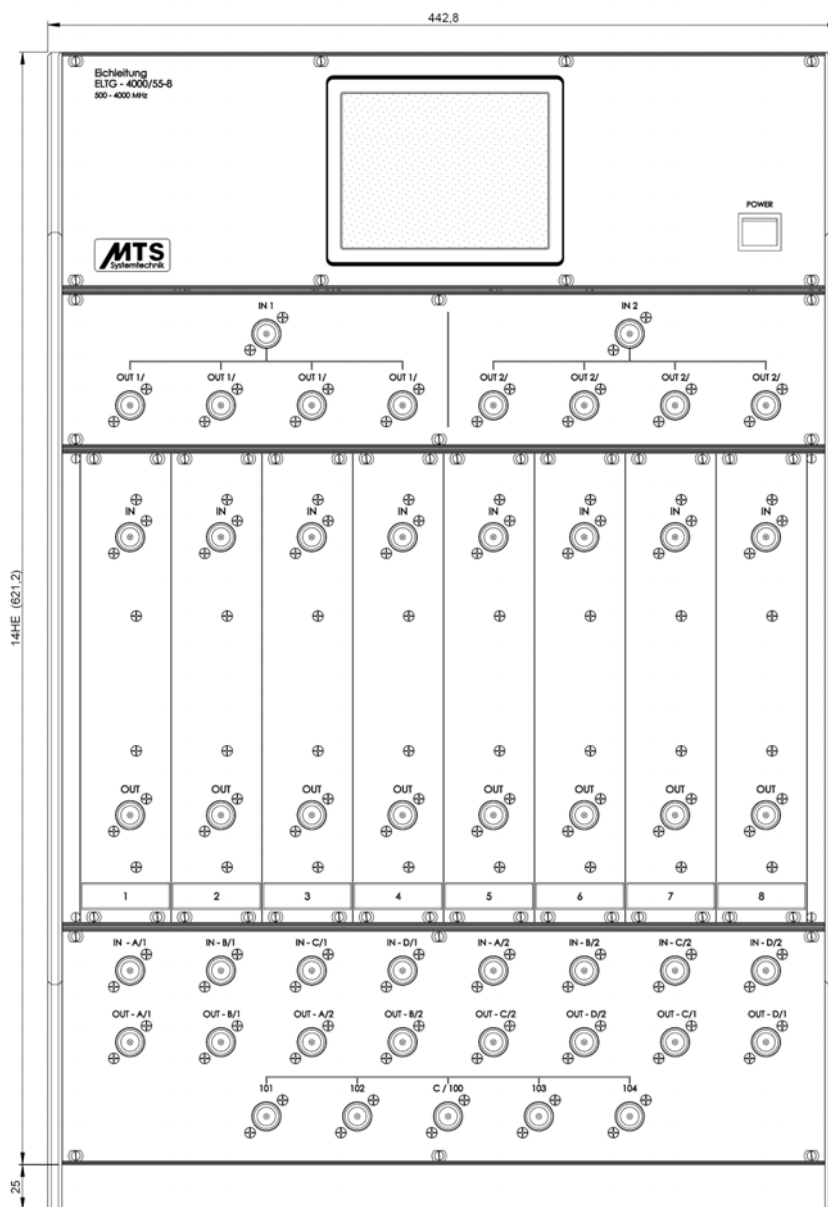
7 Comments:

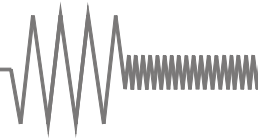
Warranty 12 months
RoHS-compliant Yes

8 Recommended accessories:

RF-cables
Hybrid couplers
Splitters/combiners

Views:





Step Attenuator Unit ELTG-4000/55-8

MTS-No.: R69.00.0430

