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Operation Manual

Compact Amplifiers with DSP

The amplifiers of the PA S-DSC series are compact, remote controllable 2-channel digital amplifiers with integrated DSP. With minimal dimensions the amplifiers of the PA S-DSC series comprise 2 symmetrical inputs and 2 outputs with 50 or 100 watts power and deliver outstanding sound quality at low levels of heat generation. Single or multiple amplifiers of the PA S-DSC series can be connected via Ethernet, programmed using the DSC Control software and a PC, and operated using a media control system.

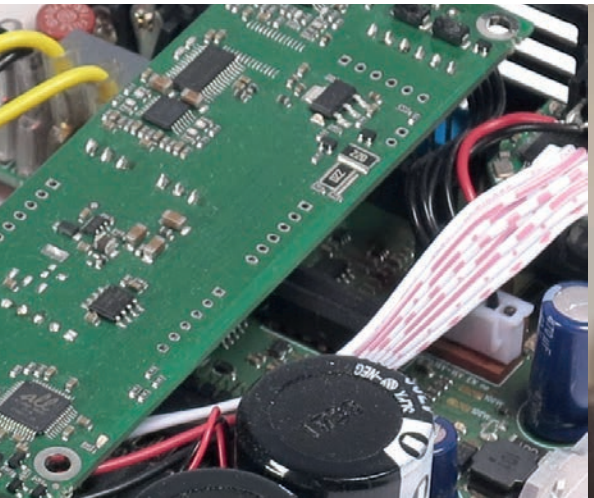
In addition to the 2×2 mixer matrix, the DSP also offers ten fully parametric filters, a delay of up to 10 ms, compressors and limiters for each input and output. Up to 100 presets can be stored permanently.

We can also preconfigure project-specific settings on request.

The integrated limiters guarantee stable, distortion-free operation even with low load impedances.

The amplifiers are equipped with an automatic switch-on function, an ON/Stand-by contact and VCA inputs for external volume control.

The amplifiers can be controlled individually or in groups using the WP-V and RP-V volume controllers or the DV module and UP/DOWN contacts. Up to 4 compact amplifiers can be mounted in 19" racks in a single height unit (in PA-T 1U).



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Further technical informations can be found in the datasheets and on our website:
https://www.lb-lautsprecher.de/en/amplifiers

Important Safety Informations

Please read the following instructions carefully before installing or connecting the unit!

Components inside the device may generate high voltages which can lead to life-threatening electric shocks if touched.

CAUTION!
Service and repair work must only be carried out by qualified personnel. Do not open the case as there is a risk of electric shock. There are no controls or components inside the device that require you to open the case. If the case has to be opened by qualified personnel, make sure that the device is completely disconnected from the power supply.

THIS UNIT MUST BE EARTHED!

Use the power cable provided to connect the device to the mains . If a cable is damaged, do not try to repair it. The device must be grounded. Never isolate the grounding on the mains plug.

The mains fuse is located inside the device. The mains fuse sho uld only be replaced with a fuse of the same rating. Never bypass the main fuse or replace it with a higher rating.

The operating voltage must match the local power supply.

The device should be shielded from moisture and wet conditions. It must not be operated in rain or close to water, baths, washbasins, sinks, swimming pools or in damp environments. Do not place any objects filled with water such as vases, glasses or bottles on the device.

Avoid direct sunlight and do not install it in the direct vicinity of radiators or other heat sources.
Upon sudden change of climatic conditions (e. g. transfer from a cold place to a warm room) water may condense inside the device, which may lead to malfunction or damage. Before switch-on wait until the amplifiers have reached room temperature.

Unplug the mains plug to protect the device during a thunderstorm or if it is going to be left unsupervised or unused for a longer period of time. This prevents the device being damaged by lightning strikes or voltage surges in the mains grid. Do not touch the case when the device is in use as it may heat up during operation. Make sure that the device is ventilated sufficiently.

Improper use will invalidate the warranty!

Disclaimer
Ib is not liable for damage to speakers or other equipment caused by negligence or in cases where the product has been used for something other than its intended purpose. In particular, Ib is not liable for lost earnings or other financial losses incurred by the purchaser. This limitation also applies to the personal liability of employees, representatives and agents.

These products meet the requirements of European Directive 2002/96/EC (WEEE), 2002/95/EC (RoHS) and EurAsian Conformity EAC TR CU 010/2011.

Technical Data – General

Inputs ..... 2 × line In sym. (pluggable screw-type terminals)
Nom. input ..... 0 dBU
Max. input ..... + 6 dBU
Input impedance ..... 20 kohms
Load impedance ..... ≥ 2 ohms/bridge ≥ 4 ohms
Frequency range ..... 10 Hz – 22 kHz
THD ..... < 0,05 % (1 kHz, 3 dB at full power)
Dynamic range ..... > 100 dB
Functions ..... 2 × 2 mixer matrix, 10 parametric filters for each input/output: bell, high shelf, low shelf, notch, all-pass, band-pass, high-pass, low-pass. Delay up to 10 ms, limiter and compressor for each input/output, 100 presets
DSP ..... 24 Bit, 48 kHz
Latency time ..... 0.64 ms
Software (incusive) ..... DSC Control – Download from our website – www.lb-lautsprecher.de/Download-DSC-Control-Software

Interface ..... Ethernet
Automatic switch-on ..... ON if NF signal is present, OFF (stand-by) after more than approx. 5 min. without signal
Auto-ON/Steady-ON selectable per DIP-switch
Controls ..... Power switch, dual-LED „SLEEP"/„ON" at front,
DIP-switches at back: Auto-ON/Steady-ON, Ground-Lift
Additional connectors ..... VCA inputs 0 – 10 V for each channel (also for DV-modules), ON/Stand-by contact (N/C)
Cooling ..... Silent running regulated fans
Protective circuits ..... Short circuit and overtemperature protection, inrush current limiter
Peak limiter, current limiter and power limiter for each speaker output
Power supply ..... 230 VAC
Mains connector ..... IEC connector
Dimensions (W×H×D) ..... ¼ 19", 1U, 110 × 43 × 242 mm
Fixing ..... Mounting bracket (included in delivery)
Warranty ..... 5 years

Technical Data – Model-Specific

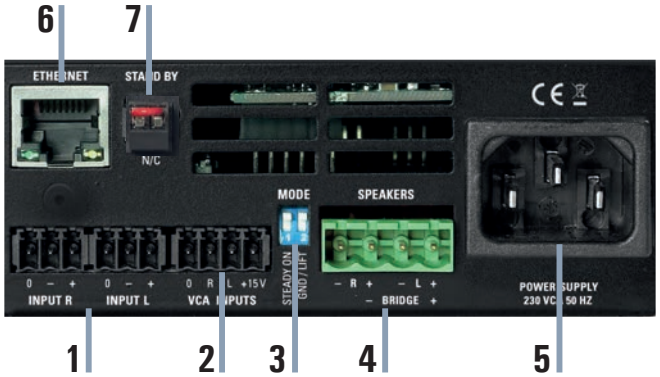
Model	Case	Outputs	Power		Power Consumption				Weight
					Stand-by	Idle	⅛th power	Max.	
PA 250 S-DSC	¼ 19" 1U	2 × Speaker Out (up to 2 × 2.5 mm²)	4 ohms 8 ohms 2 ohms Bridge	2 × 50 watts 2 × 40 watts 2 × 70 watts 1 × 140 watts (4 or 8 ohms)	5	10	25	60	1.8 kg
PA 2100 S-DSC	¼ 19" 1U	2 × Speaker Out (up to 2 × 2.5 mm²)	4 ohms 8 ohms 2 ohms Bridge	2 × 100 Watt 2 × 60 Watt 2 × 100 Watt 1 × 200 Watt (4 or 8 ohms)	6	12	45	100	2.3 kg

Front Controls

1 POWER SWITCH
The amplifier turns on with approx. 5 seconds delay.

2 LED POWER
The red LED is alight, when the amplifier is in stand-by mode. The LED lights green, when the amplifier is switched on.

Backside Controls



1 INPUTS
Symmetric line inputs with 3-pole connectors. (The left channel complies to channel one, the right channel complies to channel two.)

2 VCA INPUTS 1 to 2
Inputs for external volume control via our WP-V and RP-V control panels, with the DV-Module (digital volume control) plus up/down contacts or with 0 – 10 V dimmer actuators (0 V = nom. Gain, 10 V = -80 dB, 15 V = mute, max. current: 60mA).

3 MODE – dip-switch 1
AUTO ON / STEADY ON
In the upper position the channel pair operates in AUTO-ON/OFF mode and switch into an idle state (SLEEP) automatically if the input signal is absent for over 5 min. This reduces power consumption significantly. In the lower position the channel pair is active permanently (STEADY ON).

MODE – dip-switch 2
GROUND / LIFT
In the LIFT position (up) audio inputs and outputs are grounded softly. In the GROUND position (down) audio ground is connected to the mains ground directly.

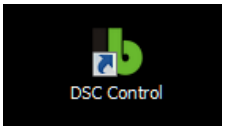
4 SPEAKER OUTPUTS
Fix the speaker cables to the screw-type terminals. The speaker impedance should not drop significantly less than 2 ohms (4 ohms in bridge mode).

5 IEC Connector
Connect to the power supply using the provided power cable.

6 Ethernet
RJ 45 port for programming and controlling the amplifer.

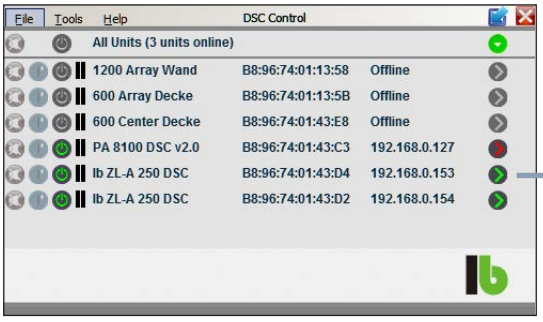
7 STAND BY
The STAND BY contact must be closed to activate the amplifier. It may either be closed by a shorting bridge (delivery condition) or by an external floating switch. Via this contact a single or multiple amplifiers of the PA S-DSC series can be switched on and off remotely, e. g. by a floating N/O contact of a voice alarm system. In case of an announcement or if the connection to the voice alarm system is cut, the contact opens and the amplifier is shut off. After the contact is closed again the amplifier turns on instantly.

DSC Control Software



Starting the DSC Control software first opens the network scan window.

Network-Scan

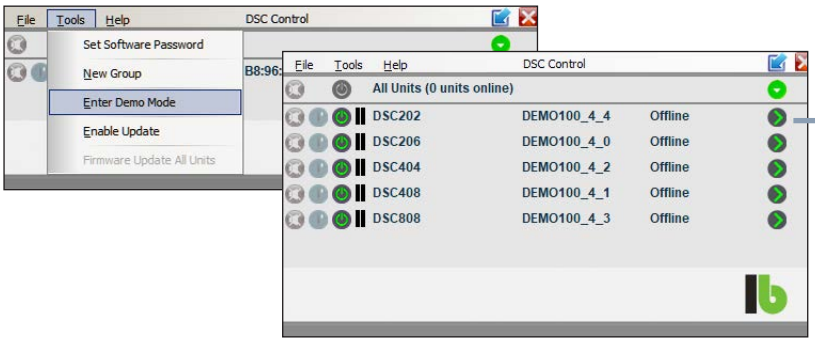


Clicking on a button with a green arrow on the right side opens the window of the corresponding device. In that window changes of the DSP settings can be made. The arrow of the opened device turns red. (Shown for PA 8100 DSC v2.0)

Demo Mode

If there is no hardware connected, the „Demo Mode“ provides virtual implementations of one of our five DSC models. Select „Tools” and “Enter Demo Mode”. (2 × IN/2 × OUT, 2 × IN/6 × OUT, 4 × IN/4 × OUT, 4 × IN/8 × OUT und 8 × IN/8 × OUT). All amplifiers of the PA S-DSC series are equipped with an 2×2 DSP (2 × IN and 2 × OUT). (DSC 202).

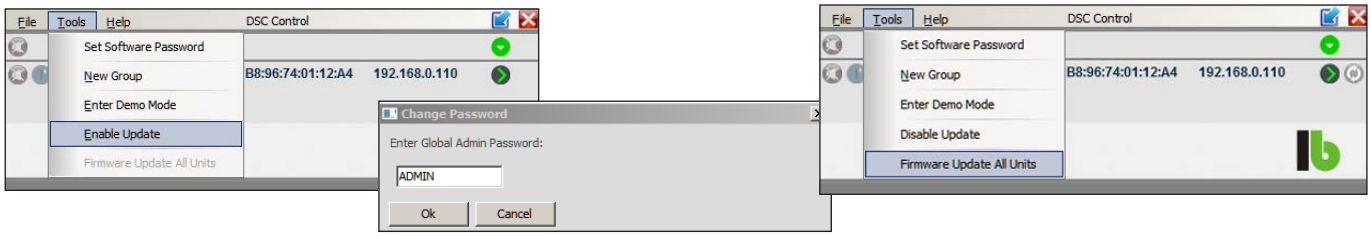
In the virtual demo devices all settings can be made and saved as presets. The „Demo Mode“ will be activated via „Tools“ and „Enter Demo Mode“. All demo devices can be opened by clicking on the green arrow.



Clicking on a button with a green arrow on the right side opens the window of the corresponding demo device.

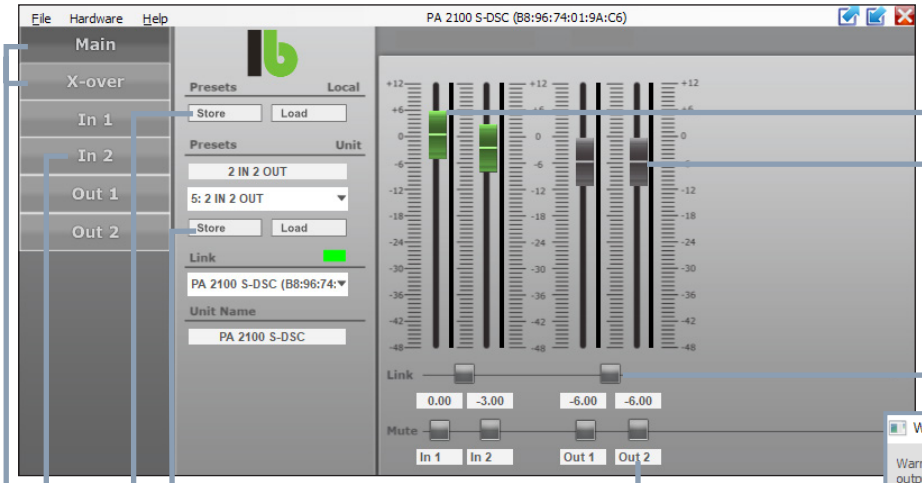
Firmware Update

Bevor updating the Firmware, save all passwords and presets. Installing a new firmware can be made also in the overview window. For firmware updates select „Tools“ and then „Enable Update“. Enter the admin or developer password and select „Firmware Update all Units“, then all connected devices will be updated. This process can take a few minutes.



Input / Output Section – DSC Control

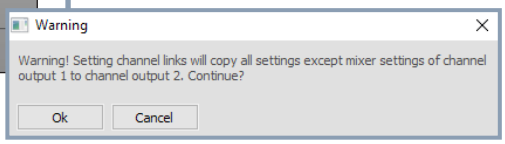
Input / Output Section



Input gain control and level meter.

Output gain control and level meter (Level relative to the adjusted limiter value).

Channels can be linked in pairs (Link). The settings of the first channel (beside the output mixer setting) are then copied to the second channel.



Save and load presets on device.

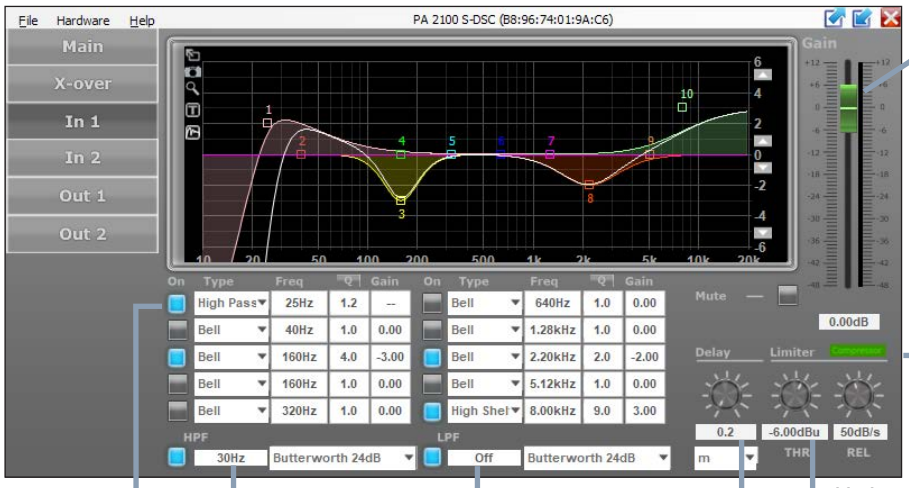
Channel labels.

Save and load presets on computer.

Select „In 1"/„In 2" opens the corresponding input channel.
This allows adjustments of: Gain, Filters, Delays, Compressor and Limiter.
Select „Out 1"/„Out 2" opens the corresponding output channel.
This allows adjustments of: Gain, Filters, Delays, Compressor and Limiter.

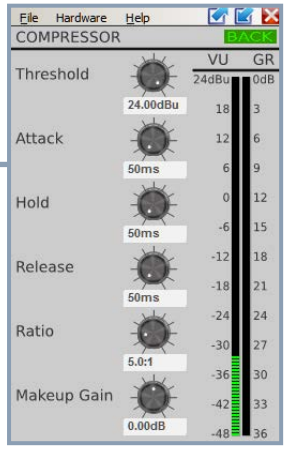
Switch between input/output section and cross-over section.

Input Channel



Gain control and level meter (level relative to the adjusted limiter value).

Compressor: Click to open the window.



Parametric filters: Bell/Notch/
All Pass/Low Shelf/High Shelf/
Band Pass/High Pass/Low Pass

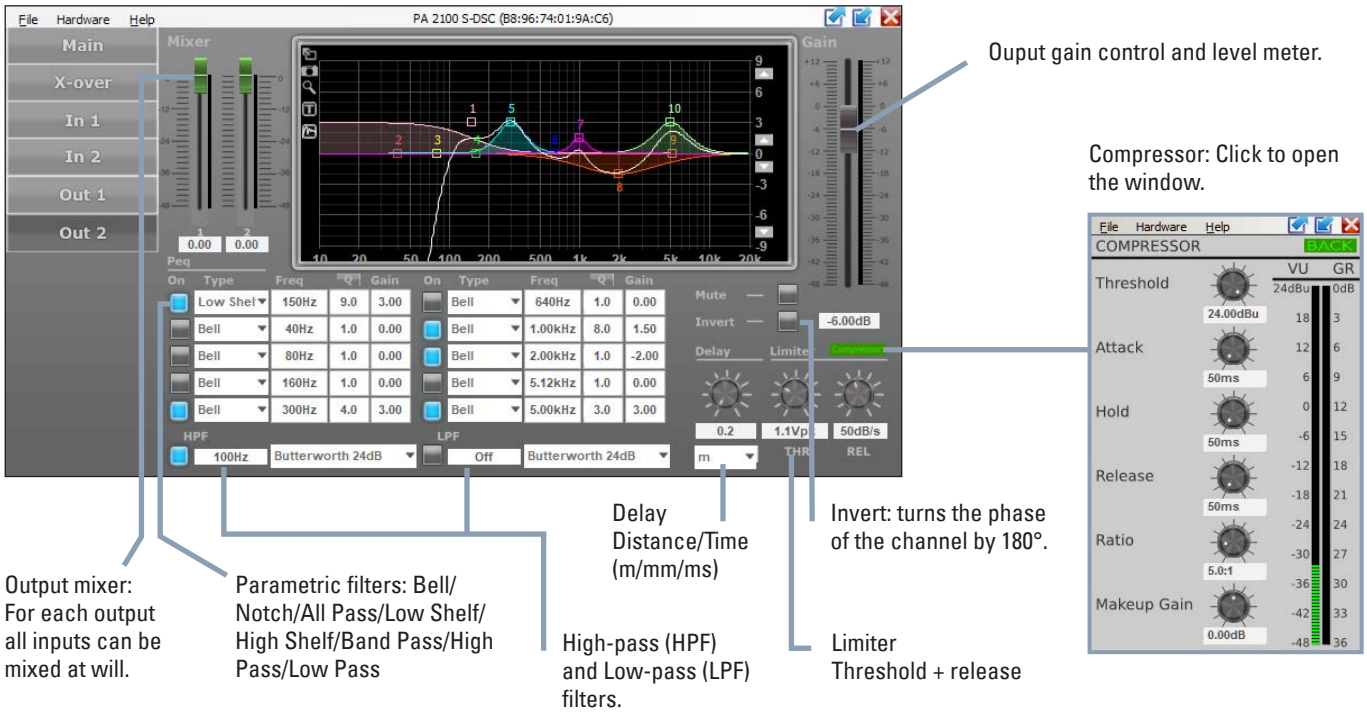
High-pass (HPF) and Low-pass (LPF) filters.

Limiter
Threshold + Release

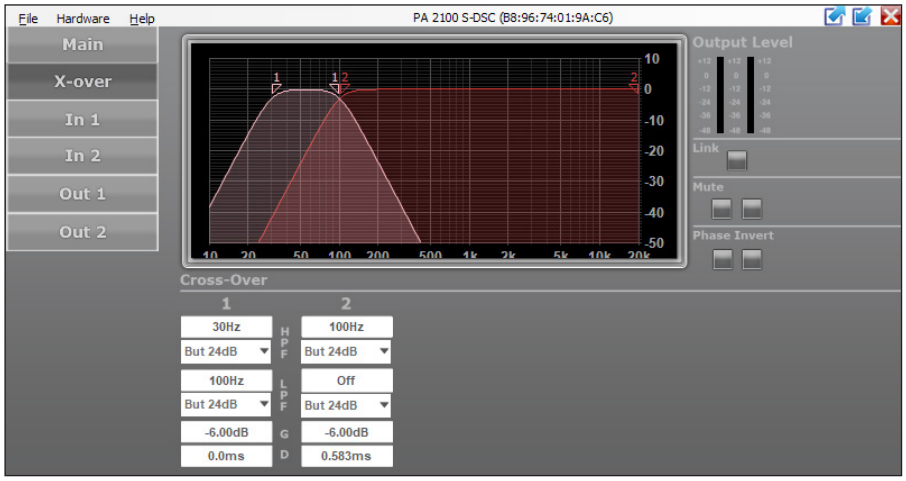
Delay
Distance/time
(m/mm/ms)

Output Section – DSC Control

Output Channel

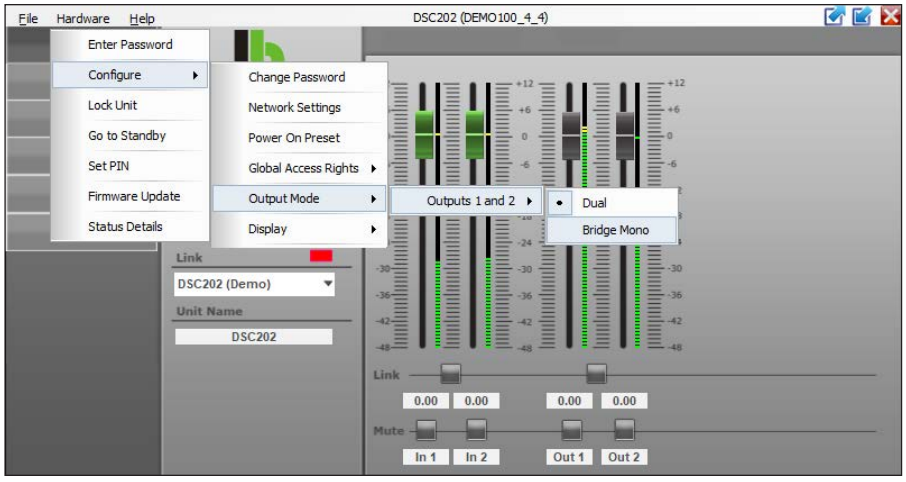


Cross-Over Section (X-over)



This window shows all output channels with high-pass filters (HPF), lowpass filters (LPF) and delays. These parameters can be set here for all channels easily.

Bridge Mode



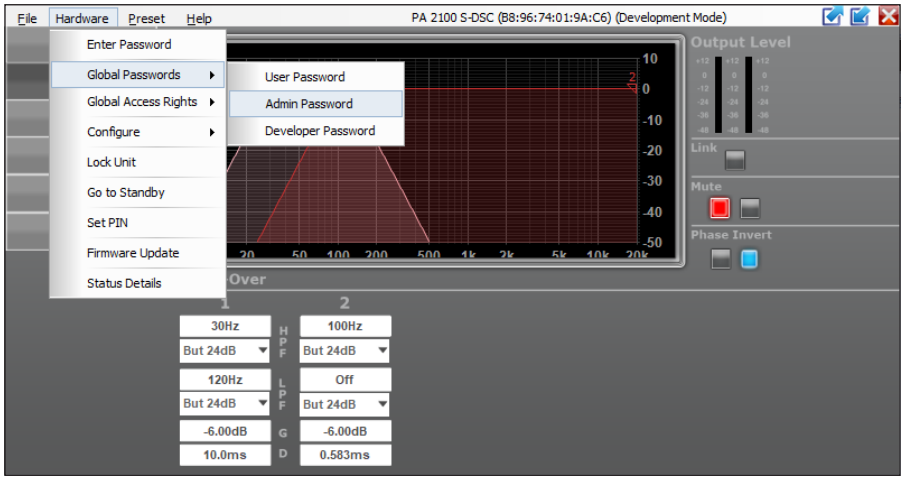
In the Tab „Hardware“ > „Configure“ > „Output Mode“ > „Outputs 1 and 2“ > „Bridge Mono“ Bridge Mode can be activated. All the settings from the first channel will be transmitted to the second channel, and the second cheannel will be inverted. The amplifier has now one output with double output capacity. The speaker then will be connected on L+ (new +pole) and R+ (new -pole).

Additional Settings – DSC Control

User Levels
The DSC Control Software has three user levels:

User:	Complete access to all controls, except the device is locked. **Default Password: USER**
Administrator:	Complete access to all controls. Is allowed to unlock the device. **Default Password: ADMIN**
Development Mode:	Complete access to all controls. Can change the access rights of the other two levels. The developer is also able to change the default passwords for all levels and replace them by custom ones as well as perform firmware updates. **Default Password: DEVELOP**

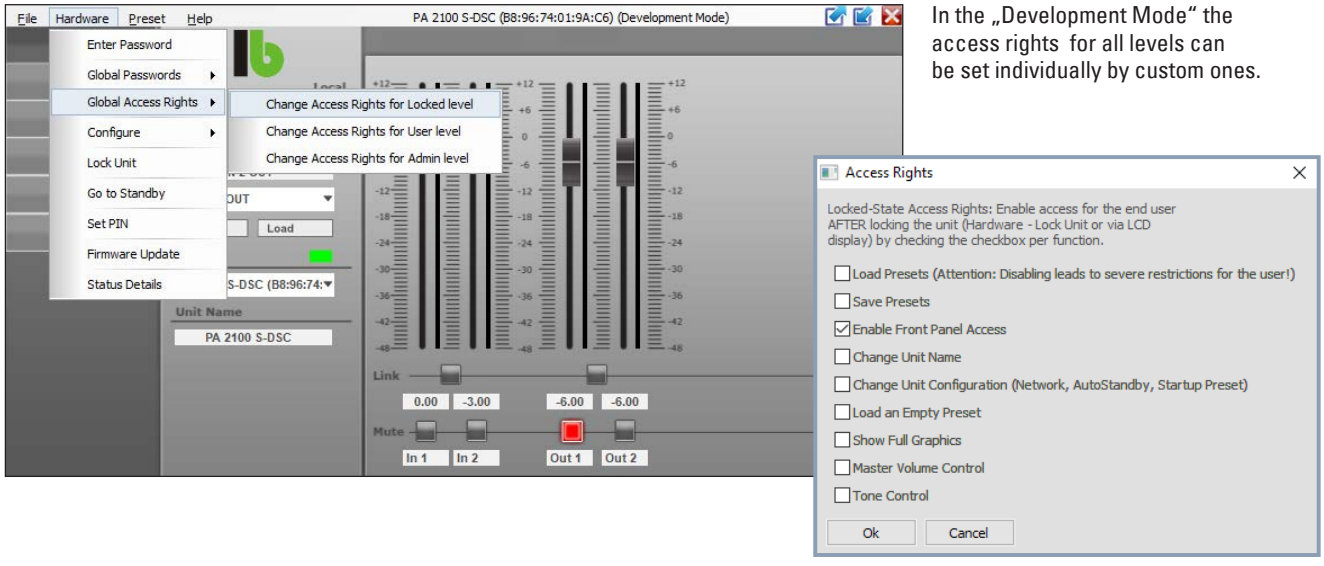
Development Mode – Change Passwords



In the „Development Mode“ the passwords for all levels can be replaced by custom ones.

ATTENTION!
If you change the passwords document the new ones carefully. Without the new passwords access to the device is no longer allowed. In this case the device can only be reset in our factory!

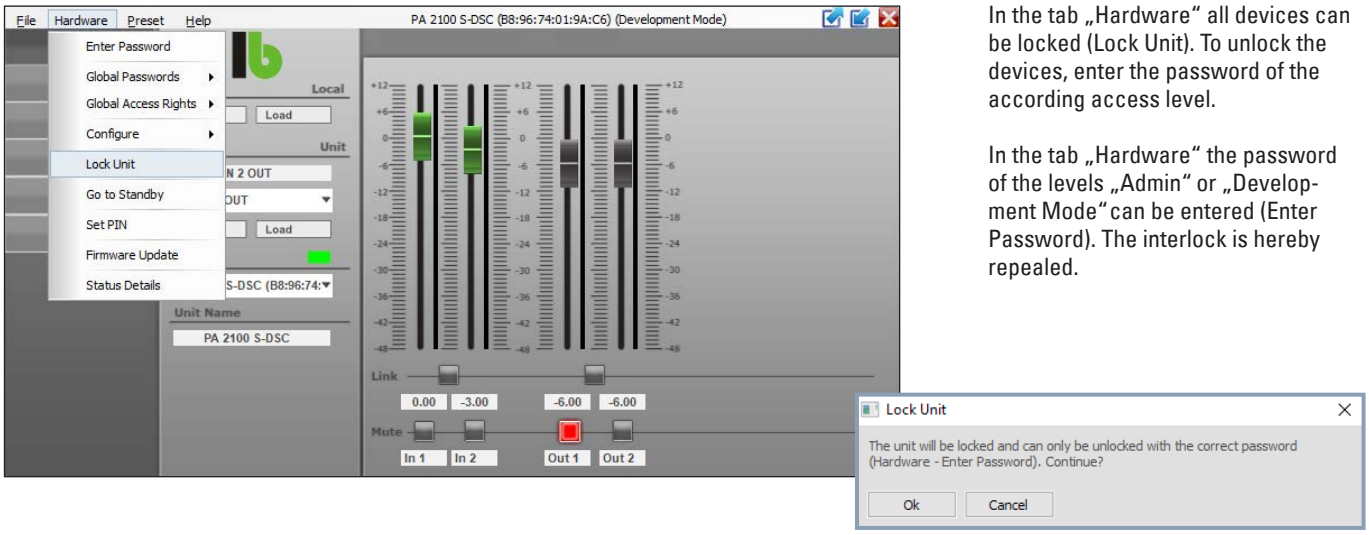
Development Mode - Change Access Rights



In the „Development Mode“ the access rights for all levels can be set individually by custom ones.

Additional Settings – DSC Control

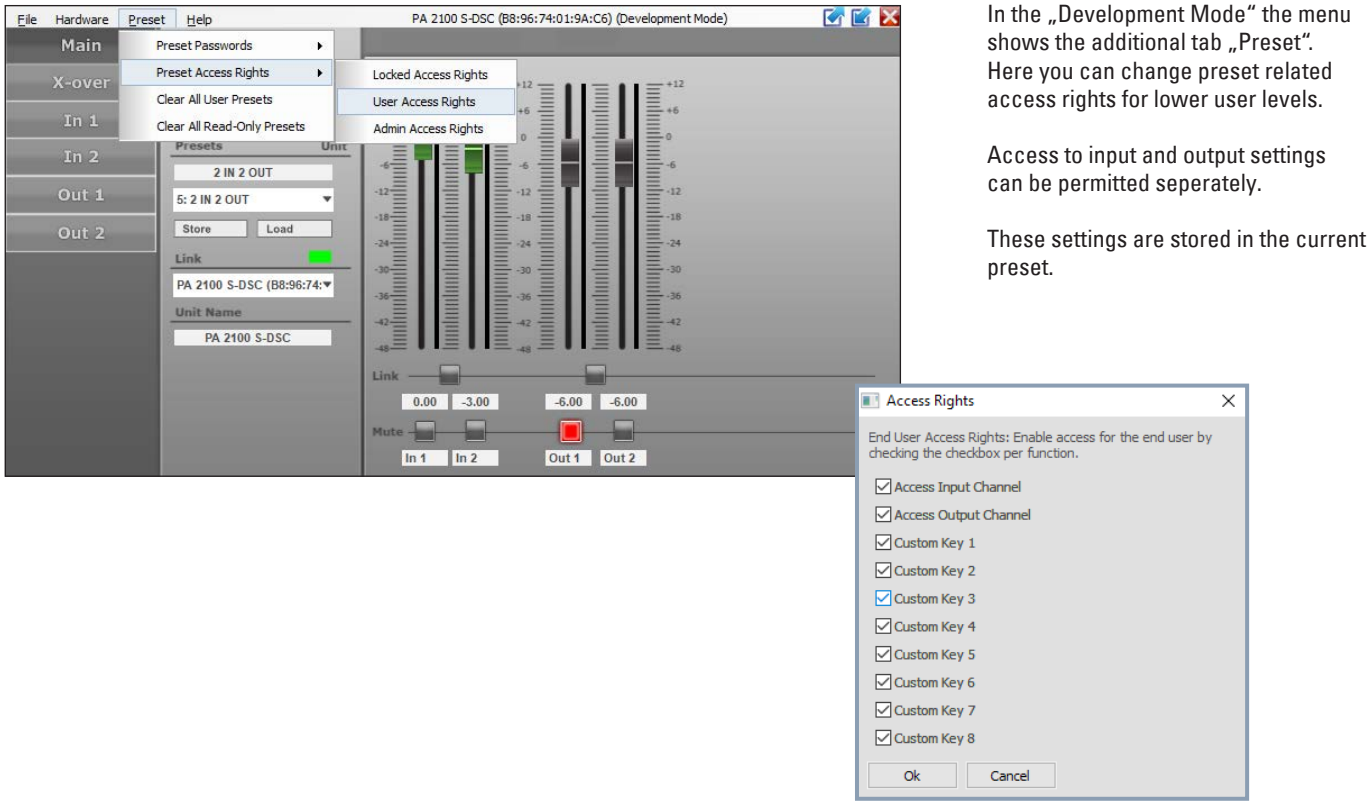
Lock and unlock Devices (Lock Unit)



In the tab „Hardware“ all devices can be locked (Lock Unit). To unlock the devices, enter the password of the according access level.

In the tab „Hardware“ the password of the levels „Admin“ or „Development Mode“ can be entered (Enter Password). The interlock is hereby repealed.

User Levels and Access Rights for Presets



In the „Development Mode“ the menu shows the additional tab „Preset“. Here you can change preset related access rights for lower user levels.

Access to input and output settings can be permitted seperately.

These settings are stored in the current preset.

Network Commands for Remote Control of the DSPs

Procedure:
Open the DSC Control Software and connect with the device. Open tab „Hardware“ > „Configure“ > „Network Settings“ and activate the Telnet Interface. A fixed IP address can be assigned as well. The device is accessed via its IP address on TCP Port 23 (Telnet).

Channels

Input	command
In 1	c0
In 2	c1

Ouput	command
Out 1	c128
Out 2	c129

Structure of the Commands

	channel number	c*	function		value v		Execute
Channel Specific Commands	[c0] - [c7] &	c1	Gain	i0m1n1	[-4799 up to 1200]	v-4799	e <cr lf>
	[c128] - [c135]	c1	Mute	i0m2n2	[v1=Mute; v0= Unmute]	v0	e <cr lf>
General Commands	[Always c0]	c0	Select preset	i0m4n4	[Number of Preset]	v1	e <cr lf>
	[Always c0]	c0	Load preset	i1m3n3	[Always 0]	v0	e <cr lf>
	[Always c0]	c0	Enter stand by	i4m3n3	[Always 0]	v0	e <cr lf>
	[Always c0]	c0	Exit stand by	i5m3n3	[Always 0]	v0	e <cr lf>
	[Always c0]	c0	Wink	i6m3n3	[Always 0]	v0	e <cr lf>

* Address channels with their index (see list).
Always send commands with CR LF.

Further Commands
H, X & L: example and commands
Q quits the connection

Examples

Channel Specific Commands	action	command
Mute	Mute In 1	c1i0m2n2v1e <cr lf>
Gain	Kanal Out 1 auf 5,00 dB	c128i0m1n1v500e <cr lf>
Change gain of one channel several times (the command needs not to be repeated completely)	only change value	c128i0m1n1v500e <cr lf>
	send again (z. B. 8 dB)	v800e <cr lf>
The same value can be taken for several channels (e. g. for c131i0m1n1v500e <cr lf>)	change the selected channel	c0<cr lf>
	take values	e <cr lf>
Non Channel Specific Commands		
Change preset	select preset number 1	c0i0m4n4v1e <cr lf>
	activate selected preset	c0i1m3n3v0e <cr lf>

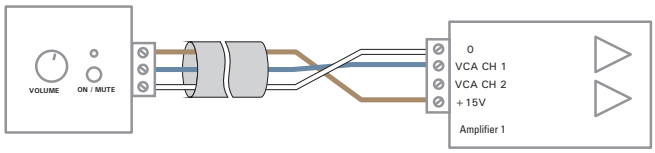
External Wiring of VCA Control Inputs

1-Channel and Multi-Channel Volume Control using WP-V or RP-V

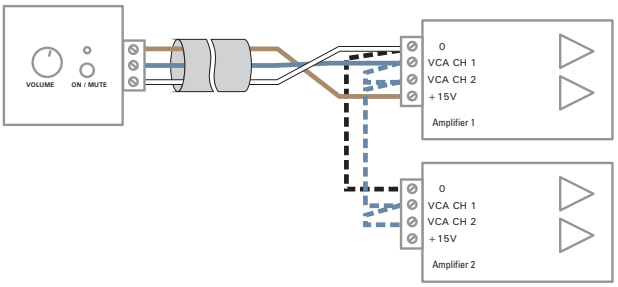
The volume control panel provides regulation of several channels of one or more amplifiers in parallel. Within one multi-channel amplifier only the VCA input contacts need to be wired for parallel operation.

When connecting two or more amplifiers an additional ground wire is inevitable.

1-Channel Volume Control using WP-V or RP-V



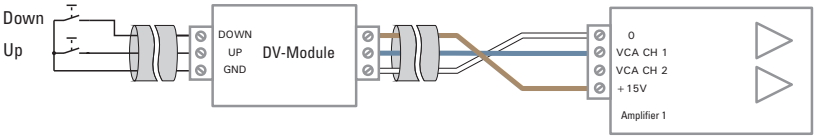
Multi-Channel Volume Control using WP-V or RP-V



1-Channel Volume Control using DV module

Our DV module is used to control the volume with floating up/down contacts. The control range from 0 to -80 dB is divided into 64 steps and the current level is stored automatically at power cycle.

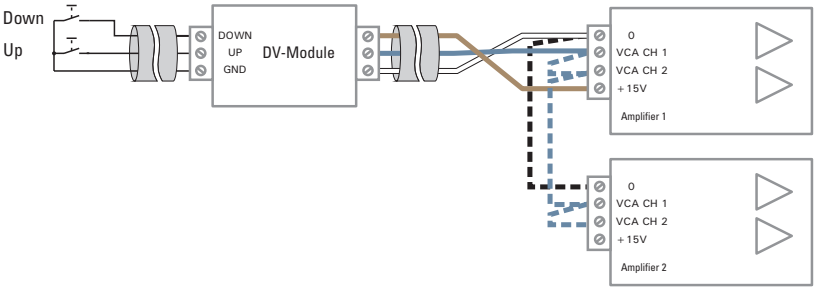
1-Channel Volume Control using DV module



Multi-Channel Volume Control using DV module

The DV modules are also able to control several amplifier channels in parallel. Proceed as for the WP-V or RP-V panels.

Multi-Channel Volume Control using DV module



External Wiring of VCA Control Inputs

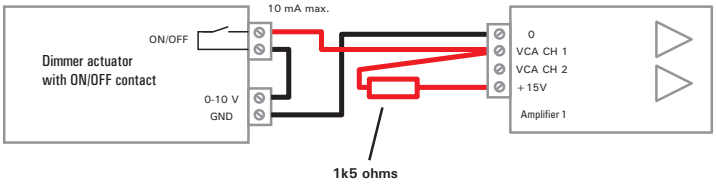
1-Channel Volume Control using a 0 – 10 V Dimmer Actuator with ON/OFF Contact

A passive 0 – 10 V dimmer actuator (e. g. for the KNX bus system) or a smart home controller with appropriate 0 – 10 V outputs can control the volume of a single or several amplifier channels. Additional floating contacts allow for the ON/MUTE functionality.

For this purpose the 15 V DC output of the amplifier is connected with the VCA inputs and the dimmer actuator using the provided **1.5 kohms** resistor.

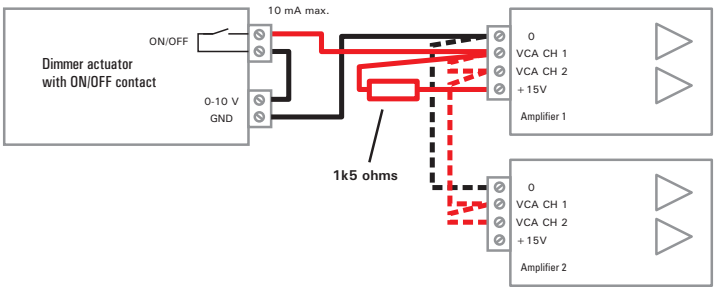
Regulation Characteristics

0 V at the VCA input = 0 dB (maximum)
10 V at the VCA input = -80 dB
15 V at the VCA input = mute

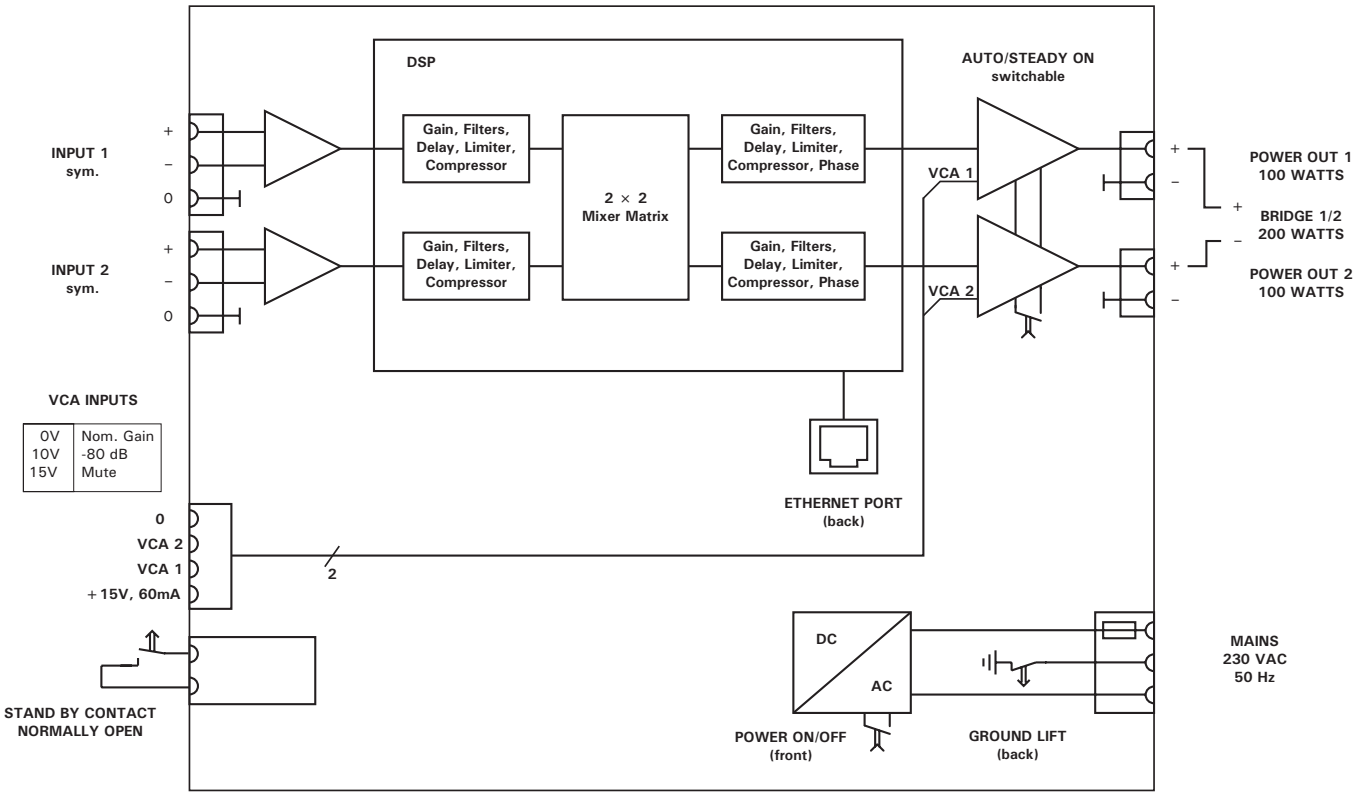


Multi-channel Volume Control using a 0 – 10 V Dimmer Actuator with ON/OFF Contact

Several amplifier channels can be controlled in parallel using the 0 – 10 V outputs of dimmer actuators or smart home controllers. Proceed as for the analogue volume control panels.



Block Diagramm PA S-DSC Series 2-Channel



Accessories

WP-V — **In wall volume control panel with ON/MUTE switch and LED**

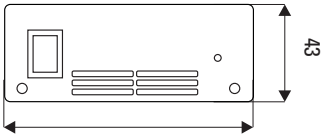
RP-V — **Rack volume control panel with ON/MUTE switch and LED**

RP-1U — **Rack cradle 19“, 1 U for up to 6 Rp-modules**

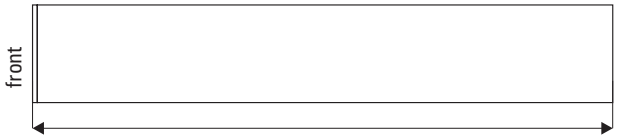
DV-Modul — **Digital module for volume control via up/down contacts**

Technical Drawings PA S-DSC Series

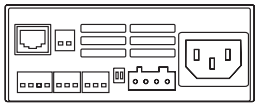
front



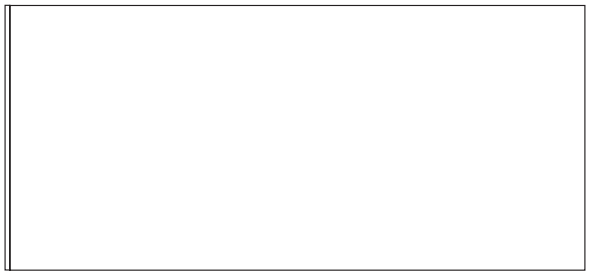
sides



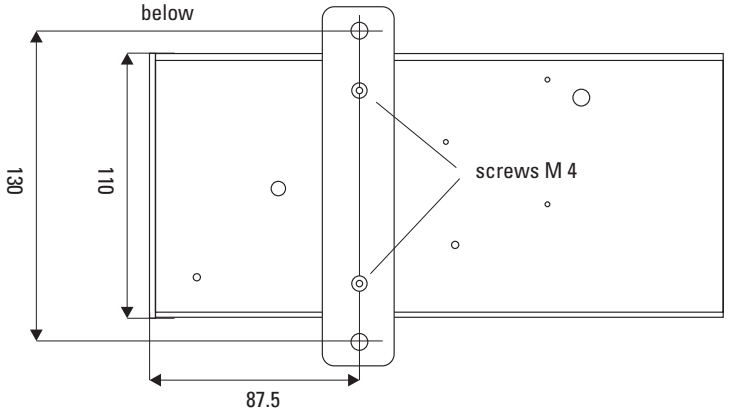
rear



on top



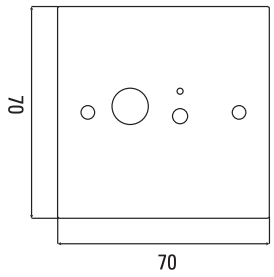
mounting bracket



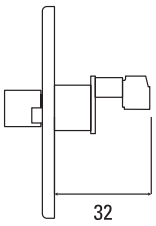
Technical Drawings WP-V / RP-V / RP-1 U / DV Module

WP-V

Front

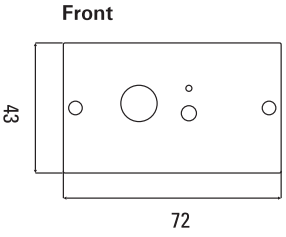


Side

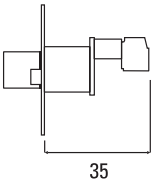


RP-V

Front

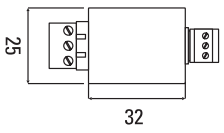


Side

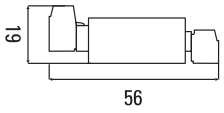


DV Module

Front

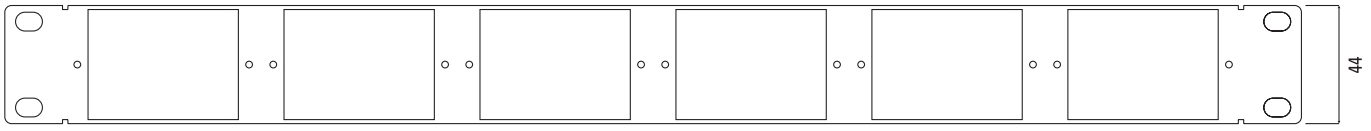


Side

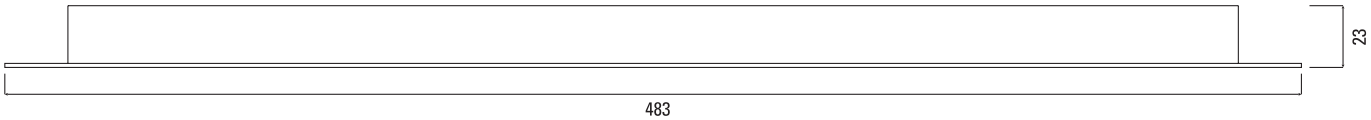


RP-1 U

Front



Top View



JURA Store Hamburg / Decentral audiosystem for sales area

Errors and omissions excepted. Specifications and design are subject to changes without prior notice.

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