

Manual

The IMP-Box is a special device for ultra-precise measurements of voltage, current, impedance and power dissipation of loudspeakers or passive crossover components. The IMP-Box works under constant voltage conditions and offers some powerful features.

The IMP-Box can be used with nearly every analyzer on the market. The only thing you need is an external power amplifier. Please note that the power amplifier should not be a bridged mode type output. Please also note that you should not exceed the analyzer inputs when driving high levels.

The IMP-Box offers three different input ranges:

Mode	max. current	resistor value
0dB	2,5 A	1Ω
-20dB	8,0 A	0,1Ω
-40dB	25,0 A	0,01Ω

As a special feature the output attenuation for the XLR outputs can also be selected in three steps (0dB; -20dB and -40dB). You can easily do this by selecting the range at the amplifier input section. This option is very useful when measuring at very high power levels and your analyzer inputs need to be protected. Please note that only the XLR outputs are affected from the voltage divider and not the DUT outputs!

If you select the same value for the attenuation of the voltage and the current the attenuation itself will cancel out when you divide the curves. No scaling is necessary. If a resistor value is needed for processing you can use 1Ω as value. There might be situations where voltage attenuation is not needed. So just use the 0dB voltage output and the current output needed. Please note that you need to use the resistor values mentioned above for processing. You can find more on this in the application manuals.

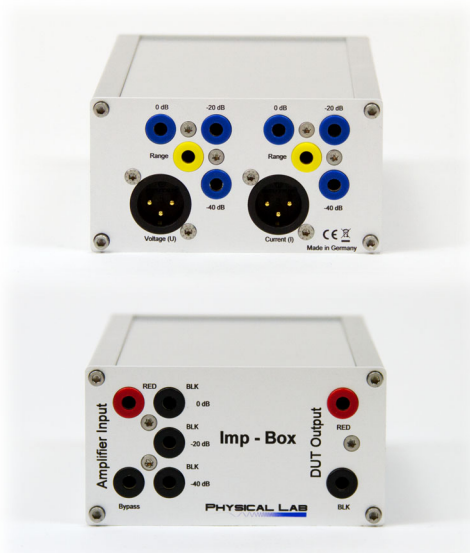
The ability to measure the current through the load, and the voltage across the load, produces many different measurements including: complex impedance, complex power, current/voltage distortion, temperature rise, temperature coefficients, and loaded network transfer functions. All measurements can be made at any power levels. You can easily analyze nonlinear behavior of speaker parameters. Knowing the actual current and voltage allows for accurate calculation of the power dissipation in the load. Moreover, the change in resistance of the load can also be used to determine the temperature rise. This data can then be used to fully characterize the temperature related parameters of the loudspeaker. The current sense output can be used to measure the reflected acoustical artifacts such as distortion or rub & buzz noise. The measurement of low frequency distortion and cone noise can often be made electrically using the current waveform, without the need of a microphone.

Electrical Specifications

- Maximum load voltage: 100V
- Maximum load current: 25A
- Resistor values: 1Ω, 0.1Ω and 0.01Ω (1%)
- XLR output impedance: 100Ω
- Voltage and current ranges: 0dB, -20dB and -40dB

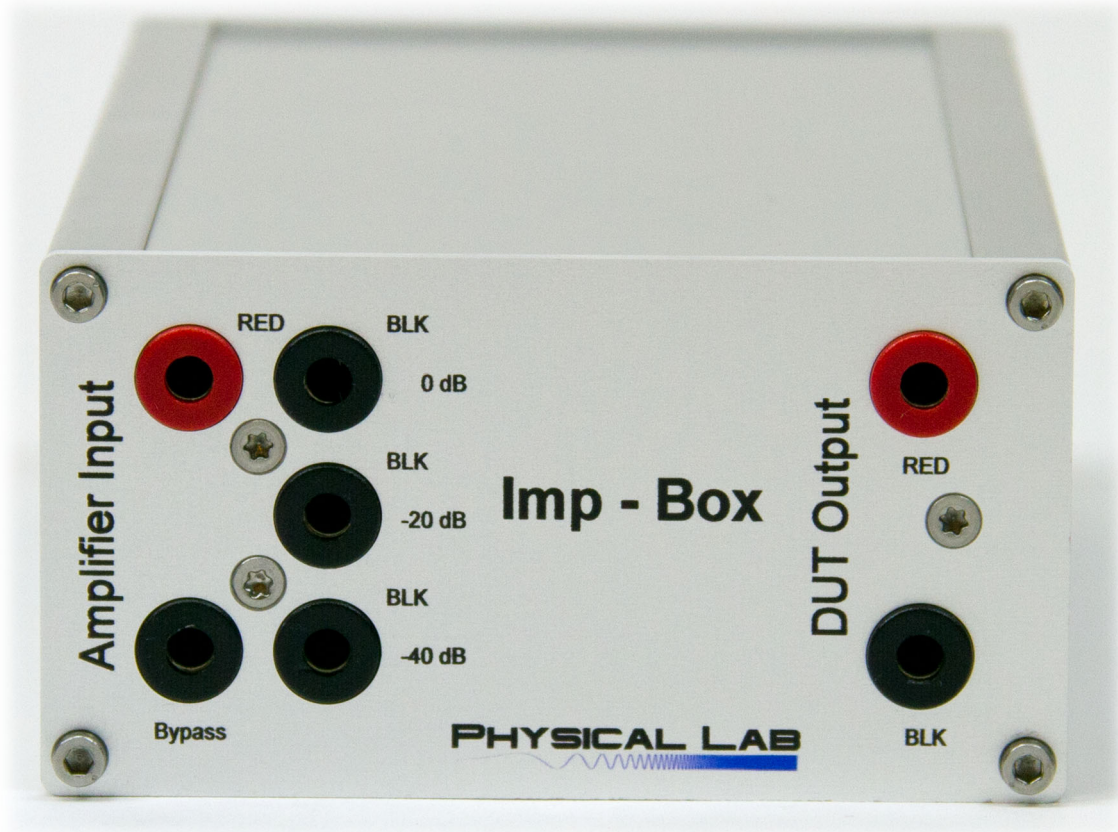
Mechanical Specifications

- Weight: 500g
- Width: 104mm
- Length: 177mm
- Height: 56mm



IMP-Box

Front Panel:



- Amplifier Input

The amplifier input offers three different attenuations (0dB, -20dB and -40dB) for different power levels. Please refer to the power table for the correct attenuation. Please note that the current attenuation on the back panel must have the same setting! There is also a bypass output available for measurements where no current sensing resistor is required or needed.

- DUT Output

Connect the speaker, electrical component or electrical component network to the output. Use the correct polarity when performing acoustical SPL measurements with phase information on speakers. Please note that the cable impedance from the output will appear as part of the load of the DUT. For this reason the connection should be as short as possible.

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Back Panel:



- Range

Use the double test plugs that comes with the IMP-Box to select the attenuations for the XLR current and the XLR voltage outputs. As mentioned before the current attenuations on the amplifier input and the XLR current output must be the same.

If you do not want to use an attenuation for the voltage output use the 0dB mode. Please note that you need to choose the right resistor value for post processing.

Voltage Mode	Current Mode	Resistor Value
0dB	0dB	1,0 Ω
0dB	-20dB	0.1 Ω
0dB	-40dB	0.01 Ω

- XLR Voltage and Current Output

Simply connect the voltage and the current outputs to the inputs of your analyzer.

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Power Table:

	0dB Mode ; max. 2.5A		-20dB Mode ; max. 8A		-40dB Mode ; max. 25A	
Load	max. Voltage	max. Power	max. Voltage	max. Power	max. Voltage	max. Power
2Ω	5V	12,5W	16V	128W	50V	1250W
4Ω	10V	25W	32V	256W	100V	2500W
6Ω	15V	37,5W	48V	384W	150V	3750W
8Ω	20V	50W	64V	512W	200V	5000W