



# REQUIREMENTS FOR POWER AMPLIFIER

FOR KLIPPEL QC, R&D SYSTEM AND CONTROL SET - WOOFER

## WHAT KIND OF AMPLIFIER IS REQUIRED?

A conventional AC-coupled audio amplifier is required with the following properties.

### RECOMMENDED PROPERTIES

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- Professional amplifiers with **balanced input** to achieve best signal to noise ratio  
**Note:** Unbalanced amplifiers may show decreased noise performance and are susceptible to ground loop problems (such as humming at 50/60 Hz).
- XLR connector for the input signal, TRS jacks connectors possible with adapters, unbalanced connectors like RCA (Cinch) are not recommended
- SPEAKON connectors for the speaker output are recommended, wire terminals are also supported
- No intelligent input protection such as muting or limiting
- No power saving feature (stand-by at low input levels)
- No DC coupling
- AC high-pass filter with moderate slope ( $\leq 12$  dB/oct.) and sufficiently low cut-off frequency ( $\leq 10$  Hz)
- Flat frequency response up to at least 20kHz
- For “Control Set Woofer” operation, a maximum phase shift of  $15^\circ$  at 20 Hz is required. Otherwise, the distortion compensation will strongly limited.
- Class D amplifiers may also be used  
**Note:** The rail voltage that is present at the poles, even if no signal is applied, can be significantly high and could cause short circuits with other equipment (Scanning Vibrometer or speaker stand). This has to be considered for safety operation.
- Digital signal processing causing latency could influence the calculated results. LSI and PWT module are measuring the amplifier delay and considering it automatically.

### FURTHER INFORMATION

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- The KLIPPEL software supervises the linearity of the amplifier and may stop measurements when the amplifier starts limiting. However, the power amplifier used should be able to provide the peak values of the electric current and voltage to the loudspeaker without limiting. Most stereo amplifier can be operated in a bridged arrangement to increase the maximal output power. The current sensor in the Distortion Analyzer allows measuring the current at a floating potential.
- Different amplifier connection cables are provided either with a SPEAKON or an open wire connection. Please indicate with your order, which type of cable you need. If no specification is made, the open wire cable is provided with additional un-mounted SPEAKON connectors by default.



## AMPLIFIER SELECTION GUIDE – all-purpose amps

Manuf.	Type	Specification		Features	Recommended for	Application	KLIPPEL Art. #	
		Output Power @ 20-20kHz / 0.1% THD	Min. Load					
SAMSON	Servo 120A	Stereo / 2 channels 2 x 60W @ 4Ω	Mono / bridged 1 x 120W @ 8Ω	4 Ω 8 Ω bridged	<ul style="list-style-type: none"> <li>• 1 U (rack unit)</li> <li>• passively cooled (no fan)</li> <li>• balanced inputs (TRS jacks)</li> <li>• cable terminal outputs</li> </ul>	R&D SYSTEM	<ul style="list-style-type: none"> <li>• micro speakers</li> <li>• low power application</li> </ul>	Purchase locally
QSC	PLX 1802	Stereo / 2 channels 2 x 525W @ 4Ω	Mono / bridged 1 x 1100W @ 8Ω	2 Ω 4 Ω bridged	<ul style="list-style-type: none"> <li>• 2 U (rack units)</li> <li>• fan cooled</li> <li>• professional amp</li> <li>• balanced inputs (XLR &amp; TRS jack)</li> <li>• cable terminal and SPEAKON c.</li> <li>• <b>Klippel standard amps</b></li> </ul>	R&D SYSTEM	• from subwoofers to micro speakers	<b>2700-001</b>
	PLX 2502	Stereo / 2 channels 2 x 675W @ 4Ω	Mono / bridged 1 x 1400W @ 8Ω			QC SYSTEM	• from subwoofers to tweeters	<b>2700-002</b>
	PLX 3602	Stereo / 2 channels 2 x 1100W @ 4Ω	Mono / bridged 1 x 2600W @ 8Ω			Control Set Woofer		<b>2700-003</b>
	GX 3	Stereo / 2 channels 2 x 425 W @ 4 Ohm <i>(at 1 kHz / 0.1% THD)</i>	bridged mode not supported	4 Ω	<ul style="list-style-type: none"> <li>• Low cost alternatives to PLX2 series</li> <li>• Same quality brand with worldwide service network</li> <li>• 2 U (rack units)</li> <li>• fan cooled</li> <li>• balanced inputs (XLR &amp; TRS jack)</li> <li>• cable terminal and SPEAKON</li> </ul>	QC SYSTEM	• QC testing from subwoofers to micro speakers	2700-008
	GX 5	Stereo / 2 channels 2 x 700 W @ 4 Ohm <i>(at 1 kHz / 0.1% THD)</i>				R&D SYSTEM	• RnD system from subwoofers to tweeters	2700-009
	GX 7	Stereo / 2 channels 2 x 1000 W @ 4 Ohm <i>(at 1 kHz / 0.1% THD)</i>				• GX3 RnD system limitation: LPM only with $F_{max} \geq 4$ kHz	2700-010	
	CX 168	8 channels 8 x 130W @ 4Ω	bridged 4 x 260W @ 8Ω	4 Ω 8 Ω bridged	<ul style="list-style-type: none"> <li>• 8 channels in only 2 U</li> <li>• fan cooled</li> <li>• professional amp</li> <li>• balanced inputs (terminal blocks)</li> <li>• cable terminal outputs</li> </ul>	R&D SYSTEM	<ul style="list-style-type: none"> <li>• from subwoofers to micro speakers</li> <li>• Power Monitor 8 applications</li> </ul>	2700-005



## AMPLIFIER SELECTION GUIDE – special application amps – headphone amps

Manuf.	Type	Specification			Features	Recommended for	Application	KLIPPEL Art. #
		Configuration	Max. Output Level	Min. Load				
LAKE People	F388 S	2x Stereo / 4 Channels	600 Ω / 16.9 Vrms / 425 mW 300 Ω / 15.5 Vrms / 800 mW 100 Ω / 15.0 Vrms / 2250 mW 50 Ω / 9.0 Vrms / 1620 mW 32 Ω / 5.9 Vrms / 1100 mW 16 Ω / 2.8 Vrms / 490 mW	16 Ω	<ul style="list-style-type: none"> <li>• 1 U (rack unit)</li> <li>• passively cooled (no fan)</li> <li>• balanced inputs (XLR)</li> <li>• Stereo TRS jack outputs (adapters to SPEAKON are included)</li> <li>• Low input to output gain (max. 8dB) → low noise</li> </ul>	R&D SYSTEM	• Headphones only!	2700-011
	F388 D	4x Stereo / 8 Channels				R&D SYSTEM		

## AMPLIFIER SELECTION GUIDE – special application amps – high power amps for low impedance DUTs

Manuf.	Type	Specification			Features	Recommended for	Application	KLIPPEL Art. #
		Output Power @ 20-20kHz / 0.1% THD		Min. Load				
CROWN	MA-5000i	Stereo / 2 channels 2 x 2500W @ 4Ω	Mono / bridged 1 x 5000W @ 8Ω	1 Ω 2 Ω bridged	<ul style="list-style-type: none"> <li>• 2 U (rack units)</li> <li>• fan cooled</li> <li>• balanced inputs</li> <li>• cable terminal and SPEAKON c.</li> <li>• professional amp for high power and low impedance applications</li> </ul>	R&D SYSTEM	<ul style="list-style-type: none"> <li>• from subwoofers to tweeters</li> <li>• RnD system limitation: not useful for LPM due to its high pass characteristic</li> </ul>	Purchase locally
	MA-9000i	Stereo / 2 channels 2 x 3500W @ 4Ω	Mono / bridged 1 x 7000W @ 8Ω					
	MA-12000i	Stereo / 2 channels 2 x 4500W @ 4Ω	Mono / bridged 1 x 9000W @ 8Ω					

*The amplifiers listed above are Klippel tested recommendations. Any other amplifier meeting the requirements may also be used.*

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