LVA 5000 SYMMETRIC AMPLIFIER

TECHNICAL DATA

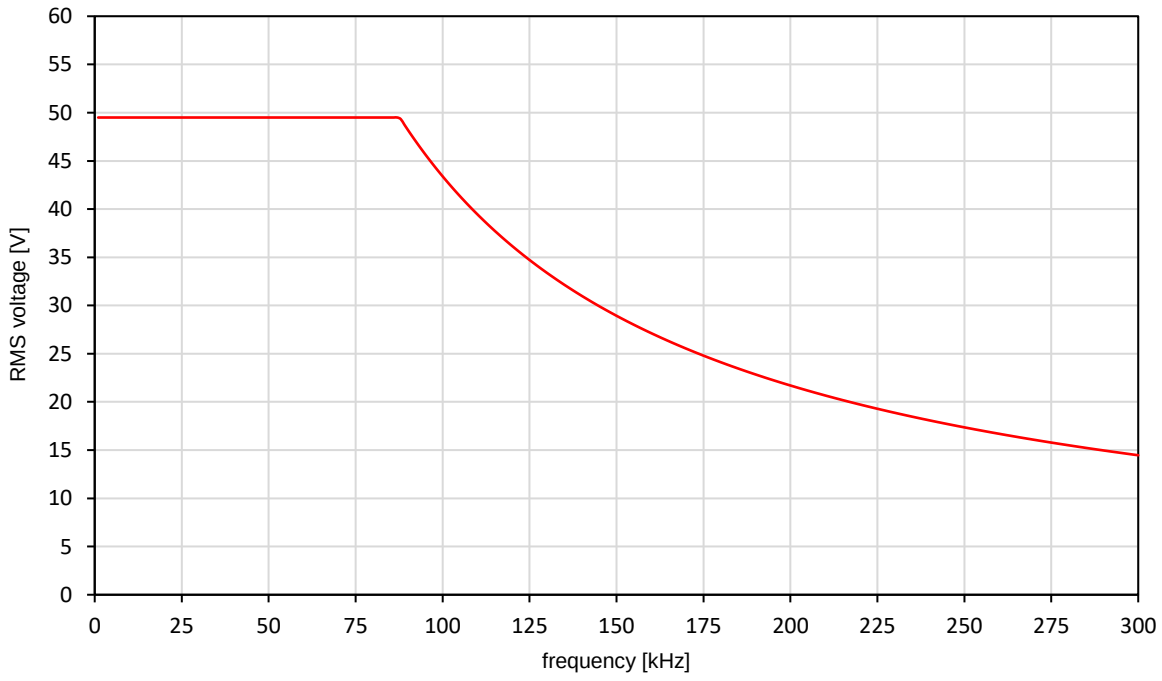
		LVA 5000/SYM
Nominal voltage ranges *(DC)*		±20 V ±36 V ±54 V ±70 V
Max. continuous current capability		250 A (range depending, see diagrams)
Max. short-time current capability *(up to 30 s)*		400 A (range depending, see diagrams)
Max. peak current capability *(up to 50 ms)*		600 A
Frequency bandwidth		large signal: DC … 100 kHz (-3 dB, maximum amplitude: see diagram)
		small signal (10 %): DC … 300 kHz (-3 dB)
Slew rate *(at resistive load = 10 Ω)*		> 40 V/µs
Rise time *(at resistive load = 10 Ω)*		≤ 1 µs (0 … 20 V)
Noise at output *(RMS)*		< 20 mV (< 20 MHz)
Load regulation: 0 … nominal load		max. 0.2 %, typ. < 0.1 %
Adjustable current limitation		accuracy, see current measurement unit response time < 20 µs
Protection circuits		overload / short circuit / overtemperature
Source resistance *(optional)*		Ri programmable: 0 … 500 mΩ
Floating output		max. voltage between earth and the amplifier's ground output: < 300 V (RMS)
External input *(optional)*	*Max. peak voltage*	0 … U_{ExtMax} (U_{ExtMax} is adjustable between ±2 V … ±25 V)
	Input impedance	approx. 10 kΩ
	Delay time	signal delay between amplifier's external input and amplifier's output < 5 µs
Internal oscillator unit		
	Type	4-channel synthesiser
	Wave forms	DC, sine, square, triangle, ramp, arbitrary
	Amplitude resolution	17 Bit
	Frequency range	DC … 1 MHz
	Frequency resolution	1 µHz
	Frequency accuracy	25 ppm
	Phase range	0° … 360°
	Phase resolution	0.001°
	Memory depth	1 MSample
	Synthesiser functions	ADD, AM, FM, PM, PWM
	Sequence memory	1024 steps
Internal control unit		
	Display	7.0" touchscreen (17.8 cm, resolution 800 x 480)
	Sequencer	integrated sequences: amplitude pulse, frequency pulse (lin/log) user defined sequences memory
	User interface	touchscreen / front panel button / incremental encoder webinterface
	Digital I/O	8 digital DC inputs: +5 V … +24 V 8 digital DC outputs: +5 V (internal U_{CC}), I_L = 40 mA (external DC input U_{CC}: +5 V … +24 V, I_L = 250 mA)

Measurement			
	Voltage measurement ranges (DC)	20 V / 40 V / 80 V (autoranging)	
	Voltage accuracy	DC: ±(0.1 % of reading + 0.02 % of range)	
	Current measurement ranges	75 A / 150 A / 300 A / 600 A	
	Current accuracy	DC: ±(0.2 % of reading + 0.04 % of range)	
Monitoring unit *(optional)*		voltage	current
	Max. peak output	±10 V	
	Scaling factor 'sf' (adjustable)	sf: 0.2 … 1000	sf: 0.1 … 1000
	Bandwidth	300 kHz	200 kHz
	Monitoring accuracy	±(% of reading + % of range + error(sf))	
	Frequency	DC	
	Voltage monitor accuracy	0.12 + 0.02 + 2 mV * sf	
	Current monitor accuracy	0.22 + 0.04 + 2 mA * sf	
	Noise of ADC measurement (RMS)	< 20 mV (DC … 300 kHz)	< 1.5 mA (DC … 300 kHz)
	Noise DAC output (RMS)	< 0.2 mV (DC … 300 kHz)	
	Delay time	< 1 µs	
	Output impedance	47 Ω	
	Isolation	earth / remaining electronics / each other	
	Protection	short circuit	
Interface		Ethernet 100 Mbit/s (HiSLIP SCPI) USB 2.0 Host	
Synchronisation bus *(multiple devices)*		device synchronisation and internal communication optical fibre, LC duplex: - synchronised sequence start - parallel operation - only one ethernet connection required	
Insulation resistance		> 1 MΩ	
Peak withstand voltage *(max. 10 s, output to earth)*		> 2000 V	
Cooling		temperature-controlled forced air cooling	
Ambient temperature		+10 °C up to +40 °C	
Storage temperature		-25 °C up to +60 °C	
Relative humidity		non condensing, max. 80 % for temperature < 31 °C, decreasing linearly to 50 % at 40 °C	
Ingress protection		IP20	
Power supply *(±10 %, 50/60 Hz)*		230 V / 400 V	
Line protection, connection		3 x 32 A, CEE	
Housing		rack, colour light grey (RAL 7035)	
	Amplifier	19", 8 U	
	approx. dimensions (HxWxD)	356 x 483 x 700 mm	
	Power supply	19", 10 U	
	approx. dimensions (HxWxD)	444 x 483 x 700 mm	
Weight	*Amplifier (approx.)*	65 kg	
	Power supply (approx.)	240 kg	

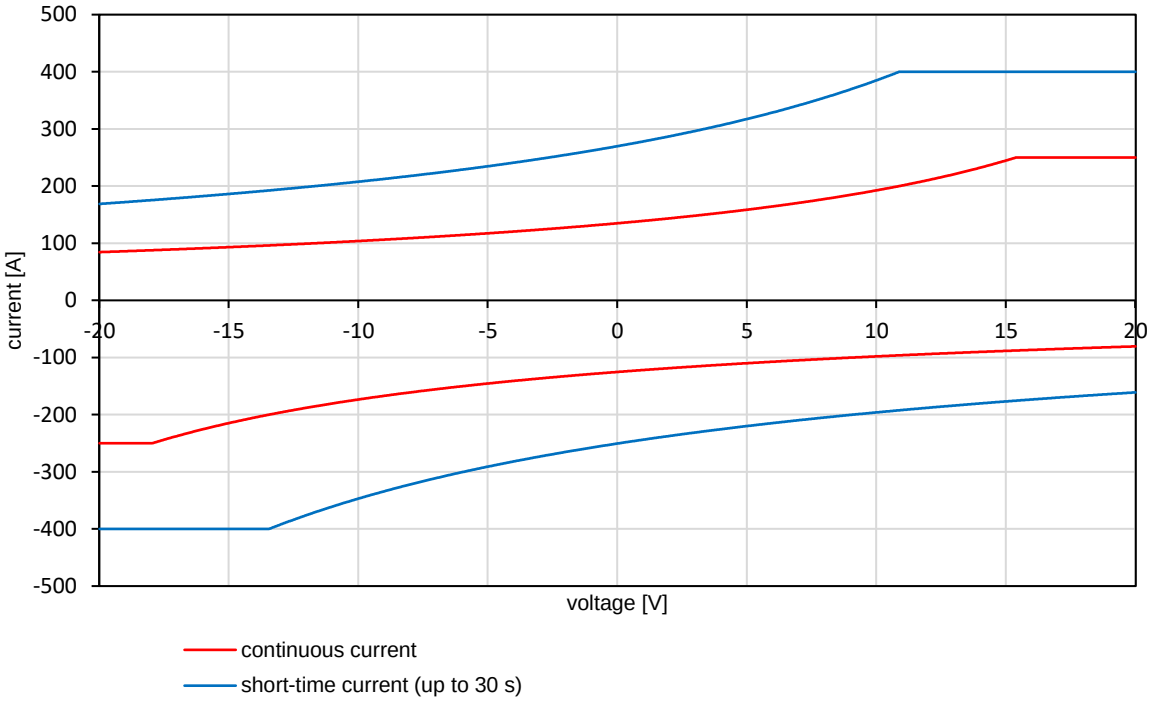
OPTIONS AND ACCESSORIES

Options			
OPT.01	IEEE488	Not in combination with OPT.02	optional
OPT.02	RS232	Not in combination with OPT.01	optional
OPT.05	U/I monitor	Galvanically isolated voltage and current measurement outputs accessible via BNC sockets (includes OPT.14)	optional
NT.11.70S	Additional voltage range	Symmetrical DC voltage range (e.g. for magnetic field tests) U: 0 … ±70 V (see diagram)	included
OPT.14	External input	0 … $U_{Ext\ max}$ $U_{Ext\ max}$ peak is adjustable between ±2 V … ±25 V OPT.14 includes a digital low pass input filter Type Bessel or Butterworth, order 1 … 6 (adjustable) Filter frequency selectable 100 Hz … 10 MHz	optional
OPT.24	Programmable internal resistance	Programmable internal resistance R: 0 mΩ … 500 mΩ / accuracy: ±2 mΩ	optional
OPT.25	Constant current mode		optional
OPT.30	Optical link	Optical interface to real time simulator LC duplex interface / Aurora 8B/10B protocol / 2 Gb/s data rate	optional
OPD	Overvoltage protection device	Voltage suppression for DC voltage range: -15 V … +20 V	not available
OPT.70	Disable sink mode of amplifier	Only in combination with option OPD	not available

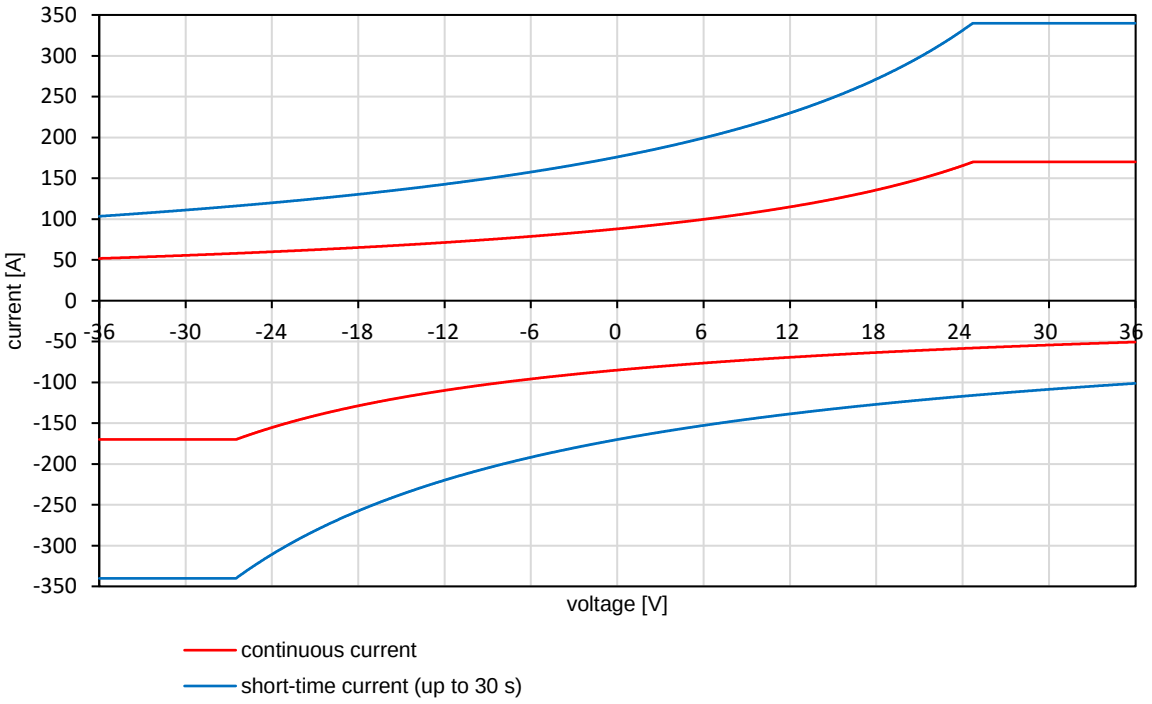
MAXIMUM ALLOWABLE OUTPUT VOLTAGE (NT.11.70S)



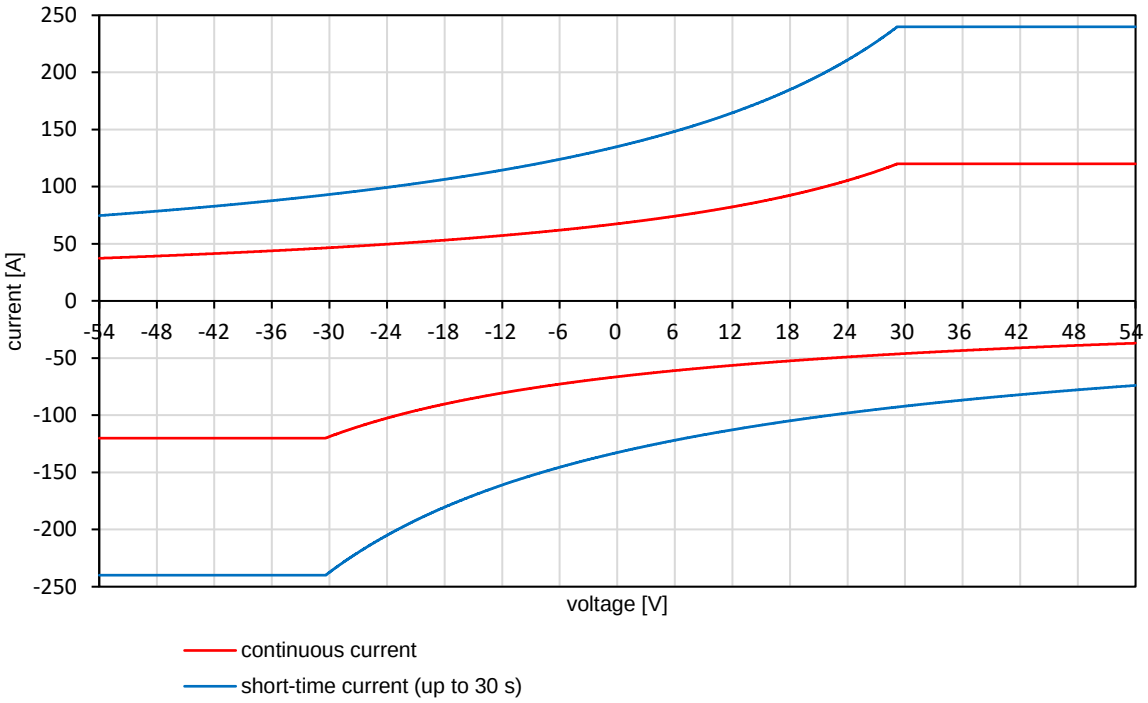
OUTPUT CURRENT CAPABILITY[1)] - 20 V Range



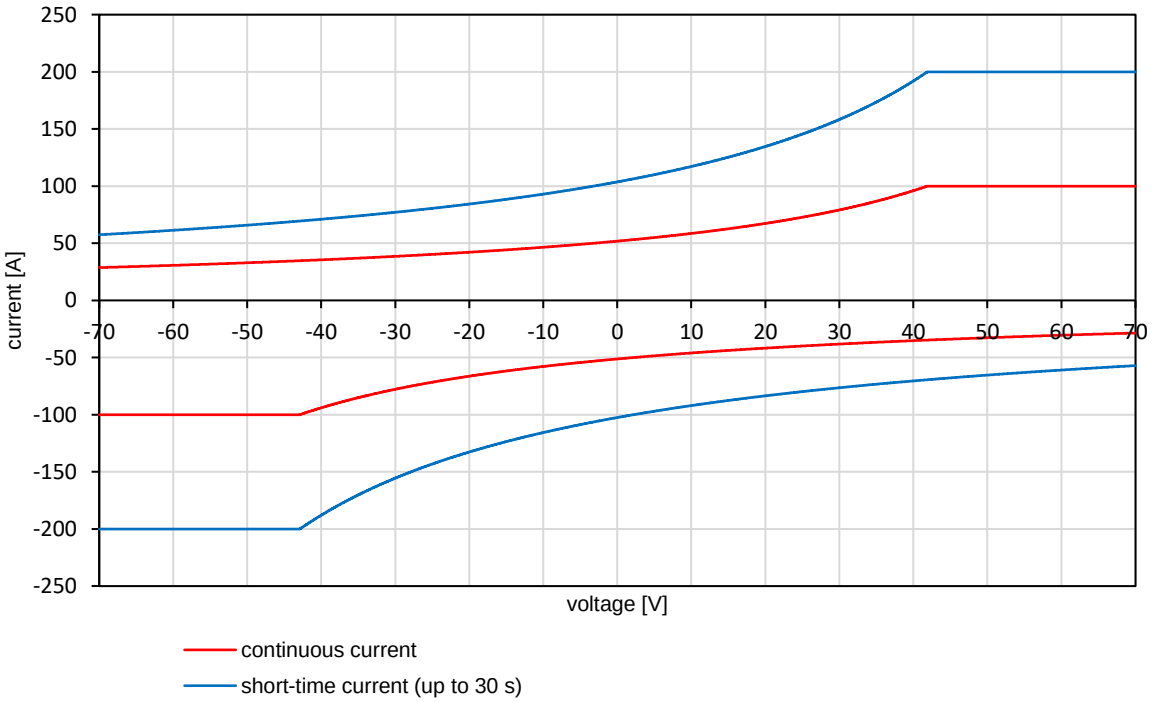
OUTPUT CURRENT CAPABILITY[1)] - 36 V Range



OUTPUT CURRENT CAPABILITY[1)] - 54 V Range



OUTPUT CURRENT CAPABILITY[1)] - 70 V Range



Remarks:

1) Diagrams refer to a supply voltage of 230 V and 23 °C ambient temperature