

LVA 2500 AMPLIFIER

TECHNICAL DATA

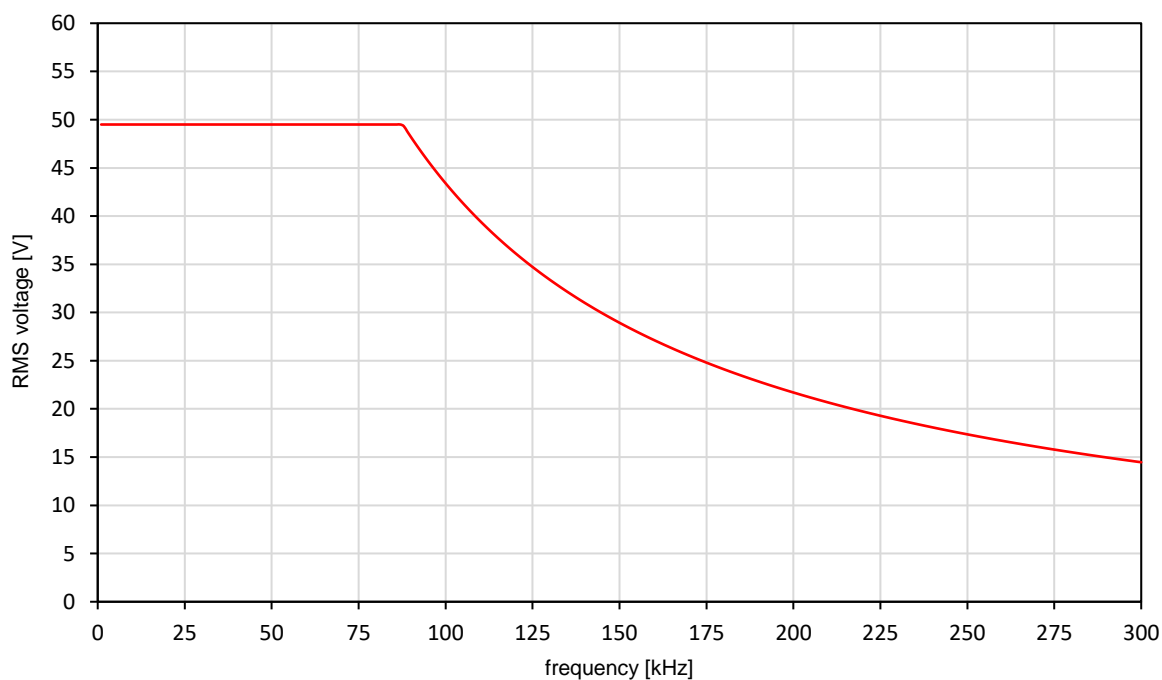
LVA 2500		
Nominal voltage ranges (DC)	-15 V ... +20 V -15 V ... +36 V -15 V ... +54 V -15 V ... +70 V	
Max. continuous current capability	125 A (range depending, see diagrams)	
Max. short-time current capability (up to 30 s)	200 A (range depending, see diagrams)	
Max. peak current capability (up to 50 ms)	300 A	
Frequency bandwidth	large signal: DC ... 100 kHz (-3 dB)	
	small signal (10 %): DC ... 300 kHz (-3 dB)	
Slew rate (at resistive load = 10 Ω)	> 40 V/ μ s	
Rise time (at resistive load = 10 Ω)	$\leq 1 \mu$ s (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 μ s	
Protection circuits	overload / short circuit / overtemperature	
Source resistance (optional)	Ri programmable: 0 ... 500 m Ω	
Floating output	max. voltage between earth and the amplifier's ground output: < 300 V (RMS)	
External input (optional)	<i>Max. peak voltage</i>	0 ... U _{ExtMax} (U _{ExtMax} is adjustable between ± 2 V ... ± 25 V)
	<i>Input impedance</i>	approx. 10 k Ω
	<i>Delay time</i>	signal delay between amplifier's external input and amplifier's output < 5 μ s
Internal oscillator unit		
	<i>Type</i>	4-channel synthesiser
	<i>Wave forms</i>	DC, sine, square, triangle, ramp, arbitrary
	<i>Amplitude resolution</i>	17 Bit
	<i>Frequency range</i>	DC ... 1 MHz
	<i>Frequency resolution</i>	1 μ Hz
	<i>Frequency accuracy</i>	25 ppm
	<i>Phase range</i>	0° ... 360°
	<i>Phase resolution</i>	0.001°
	<i>Memory depth</i>	1 MSample
	<i>Synthesiser functions</i>	ADD, AM, FM, PM, PWM
	<i>Sequence memory</i>	1024 steps
Internal control unit		
	<i>Display</i>	7.0" touchscreen (17.8 cm, resolution 800 x 480)
	<i>Sequencer</i>	integrated sequences: amplitude pulse, frequency pulse (lin/log) user defined sequences memory
	<i>User interface</i>	touchscreen / front panel button / incremental encoder webinterface
	<i>Digital I/O</i>	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: $\pm(0.1 \% \text{ of reading} + 0.02 \% \text{ of range})$
	Current measurement ranges	37.5 A / 75 A / 150 A / 300 A
	Current accuracy	DC: $\pm(0.2 \% \text{ of reading} + 0.04 \% \text{ of range})$
Monitoring unit (optional)		voltage current
	Max. peak output	$\pm 10 \text{ V}$
	Scaling factor 'sf' (adjustable)	sf: 0.2 ... 1000 sf: 0.1 ... 1000
	Bandwidth	300 kHz 200 kHz
	Monitoring accuracy	$\pm(\% \text{ of reading} + \% \text{ of range} + \text{error(sf)})$
	Frequency	DC
	Voltage monitor accuracy	$0.12 + 0.02 + 2 \text{ mV} * \text{sf}$
	Current monitor accuracy	$0.22 + 0.04 + 2 \text{ mA} * \text{sf}$
	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 M Ω
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 ($\pm 10 \%$, 50/60 Hz)		230 V / 400 V
Line protection, connection		3 x 16 A, CEE
Housing		plug-in unit, colour light grey (RAL 7035)
	Amplifier	19", 5 U
	approx. dimensions (HxWxD)	222 x 483 x 700 mm
	Power supply	19", 6 U
	approx. dimensions (HxWxD)	267 x 483 x 700 mm
Weight	Amplifier (approx.)	40 kg
	Power supply (approx.)	120 kg

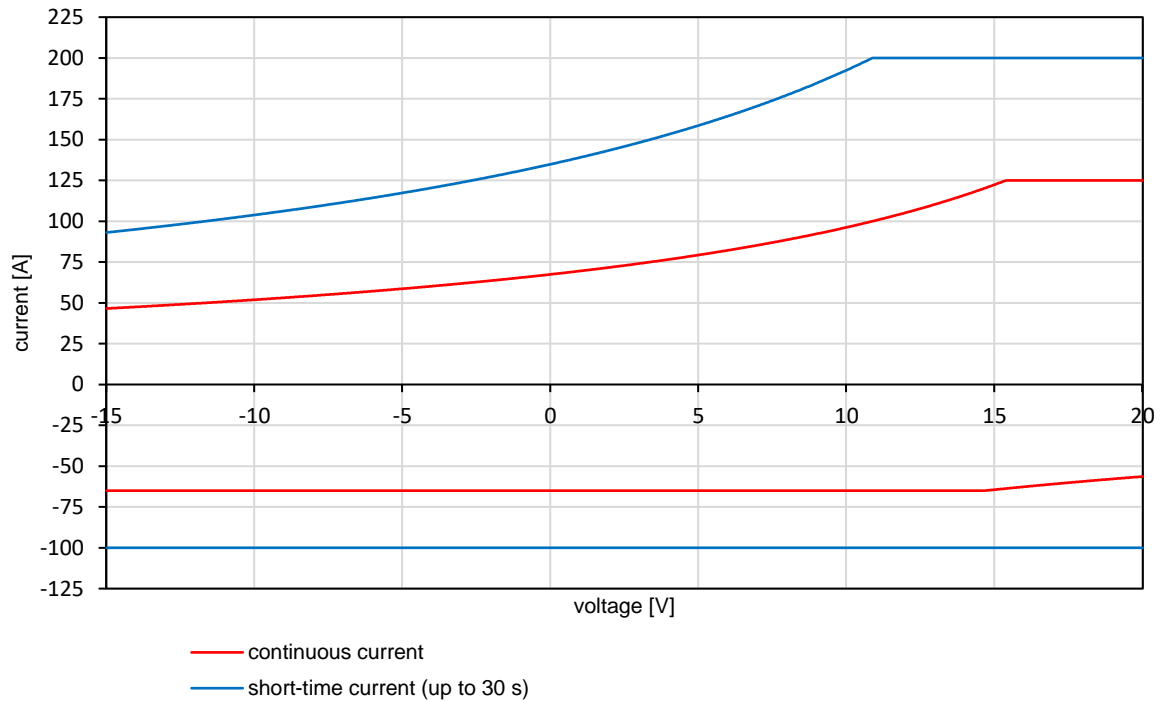
OPTIONS AND ACCESSORIES

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)	optional
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 m Ω ... 500 m Ω / accuracy: ± 2 m Ω	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	optional
OPT.70	Disable sink mode of amplifier	Only in combination with option OPD	optional

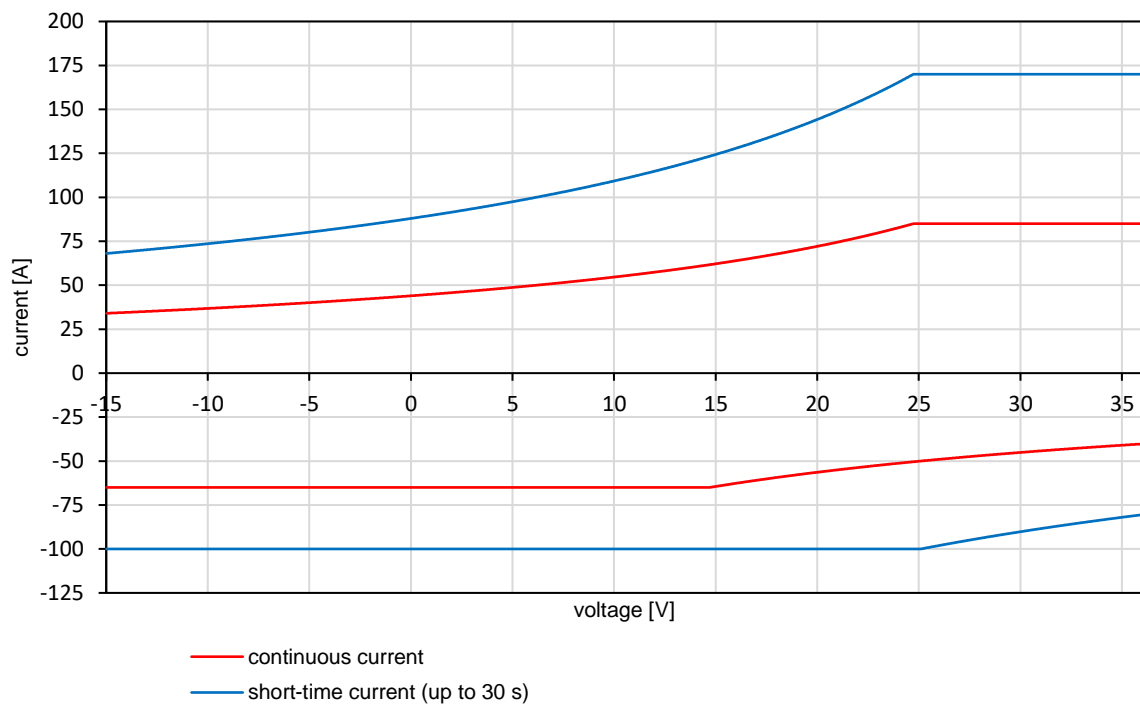
MAXIMUM ALLOWABLE OUTPUT VOLTAGE (NT.11.70S)



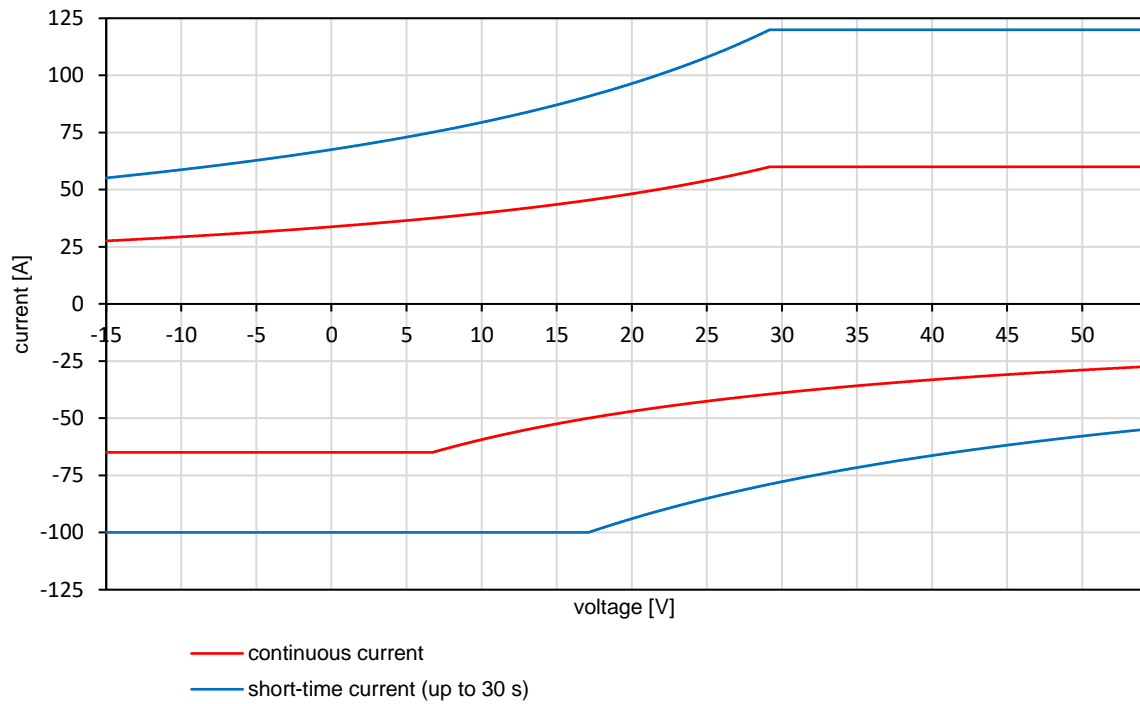
OUTPUT CURRENT CAPABILITY¹⁾ - 20 V Range



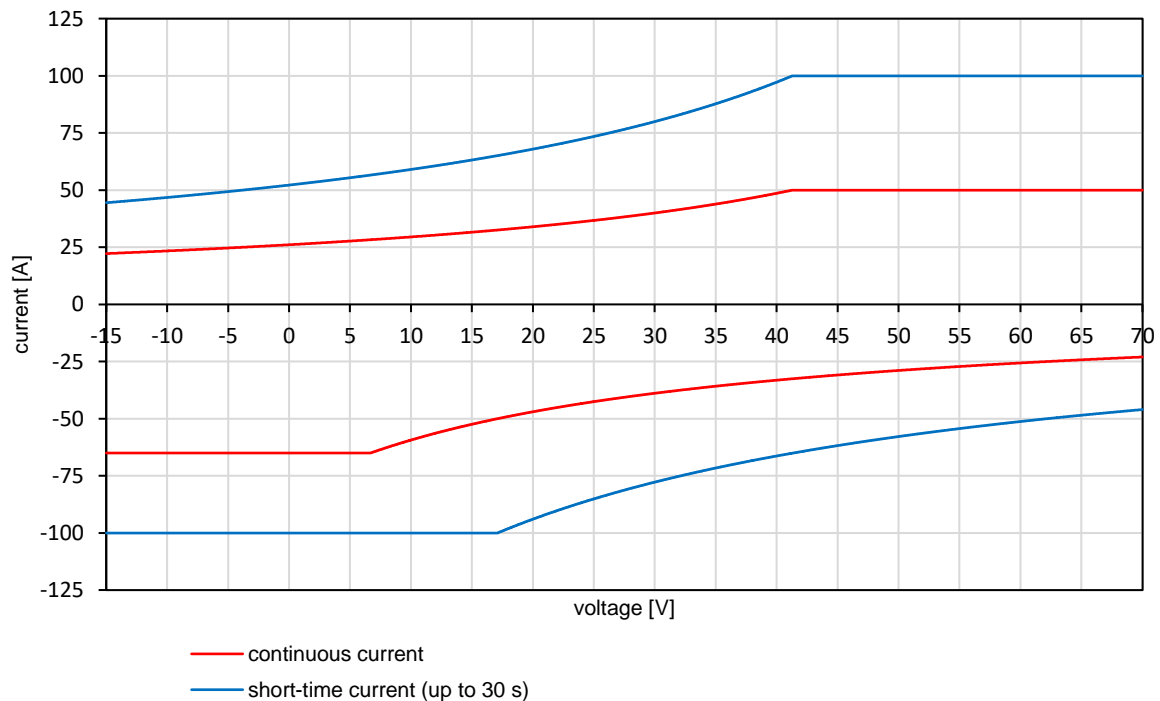
OUTPUT CURRENT CAPABILITY¹⁾ - 36 V Range



OUTPUT CURRENT CAPABILITY¹⁾ - 54 V Range



OUTPUT CURRENT CAPABILITY¹⁾ - 70 V Range



Remarks:

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