

LVA 7500 SYMMETRIC AMPLIFIER

TECHNICAL DATA

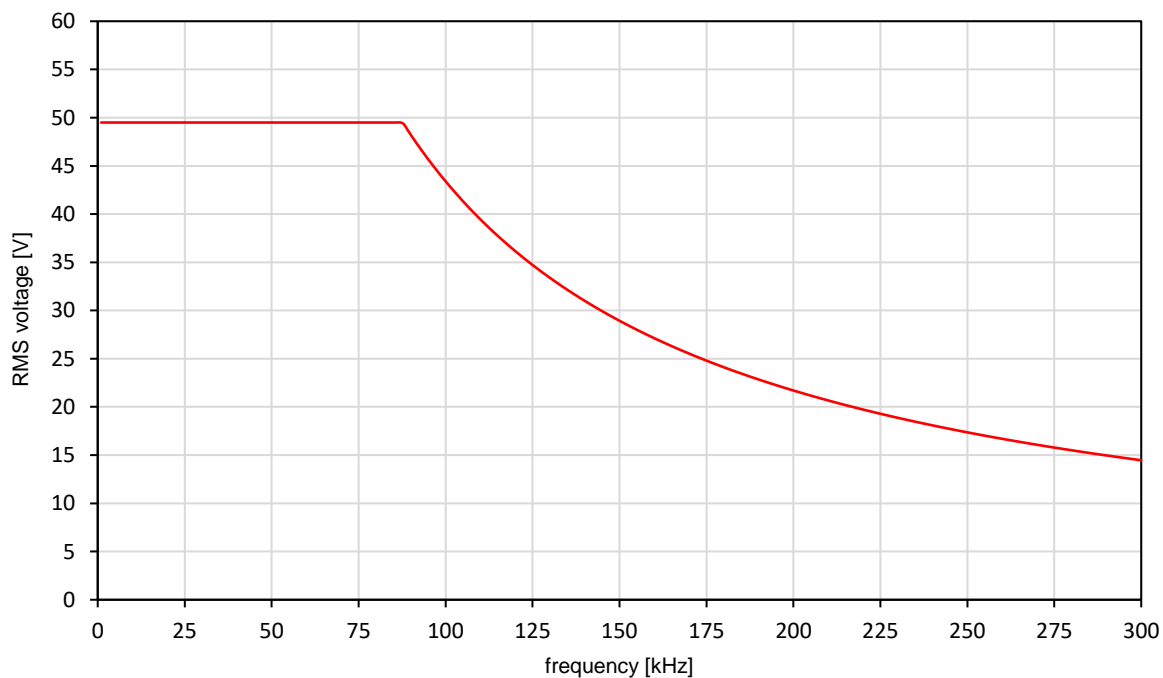
| LVA 7500/SYM | | |
|---|---|--|
| Nominal voltage ranges (DC) | $\pm 20\text{ V}$ $\pm 36\text{ V}$ $\pm 54\text{ V}$ $\pm 70\text{ V}$ | |
| Max. continuous current capability | 375 A (range depending, see diagrams) | |
| Max. short-time current capability (up to 30 s) | 600 A (range depending, see diagrams) | |
| Max. peak current capability (up to 50 ms) | 900 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/ μ s | |
| Rise time (at resistive load = 10 Ω) | $\leq 1\text{ }\mu$ 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 $\pm 2\text{ V}$... $\pm 25\text{ V}$) |
| | <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 | 125 A / 250 A / 500 A / 900 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 32 A, CEE | |
| Housing | | plug-in unit, colour light grey (RAL 7035) | |
| | Amplifier + power supply in rack, integrated | 19", 23 U | |
| | Dimensions of rack (H x W x D), minimum | 19", 24 U 1320 x 600 x 1050 mm | |
| Weight | Amplifier + power supply in rack (approx.) | 460 kg | |

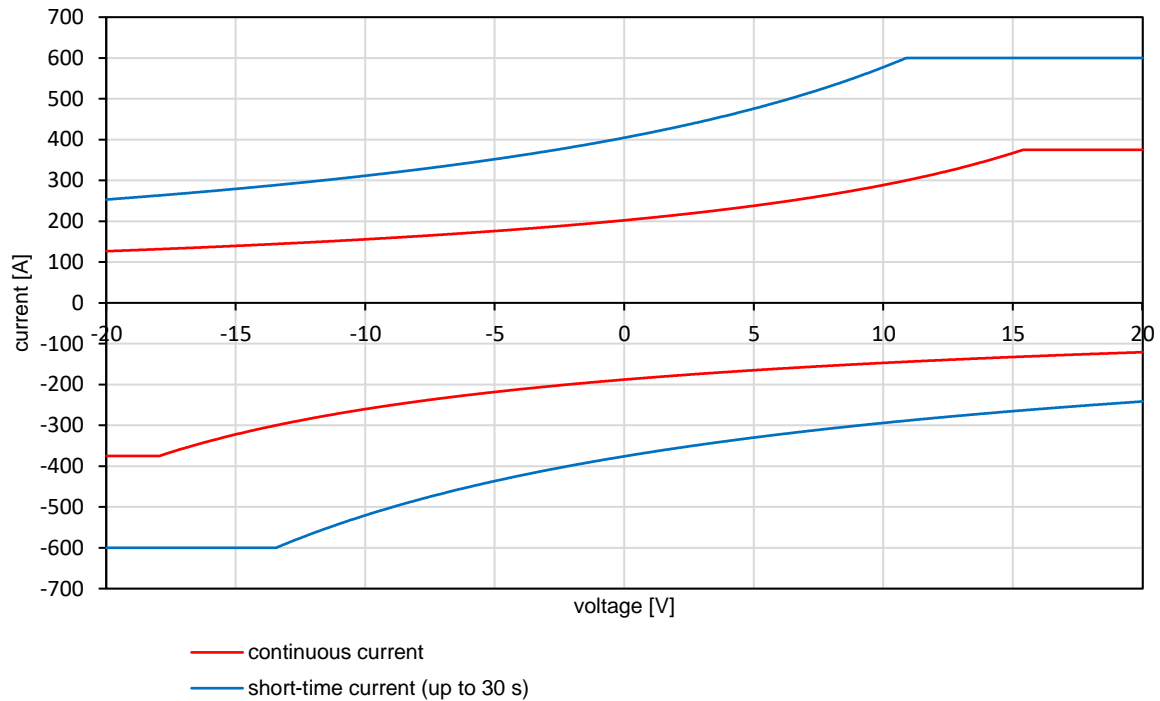
OPTIONS AND ACCESSORIES

| 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 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 | not available |
| OPT.70 | Disable sink mode of amplifier | Only in combination with option OPD | not available |

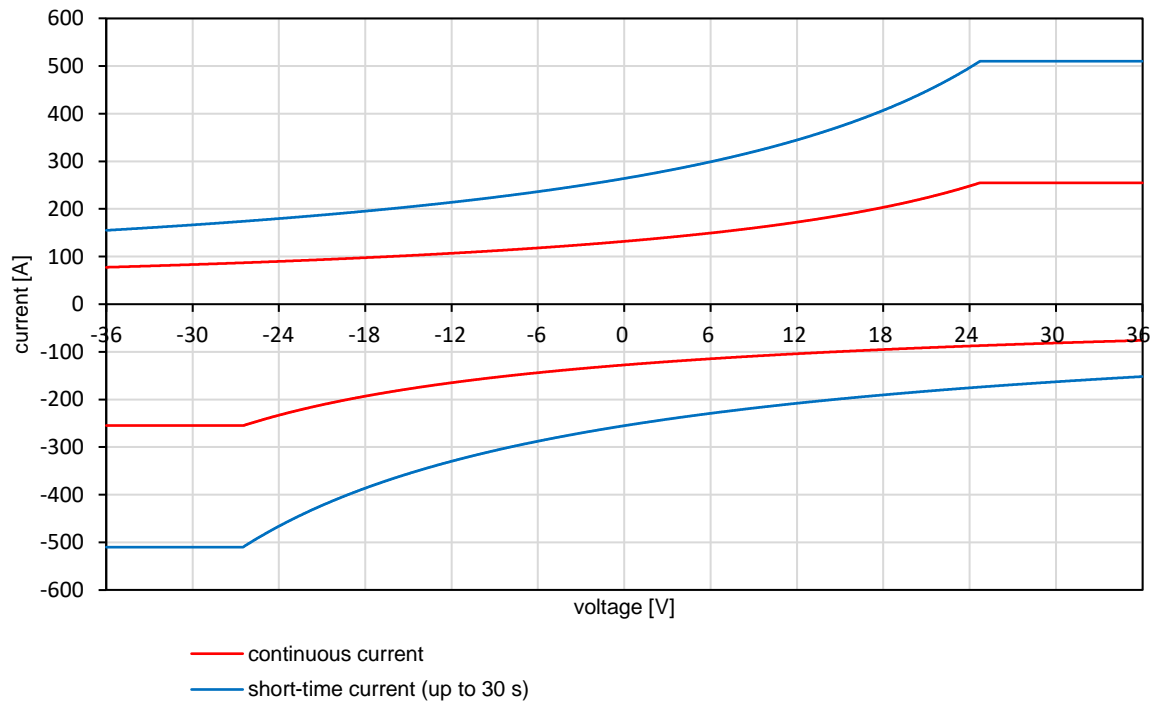
MAXIMUM ALLOWABLE OUTPUT VOLTAGE (NT.11.70S)



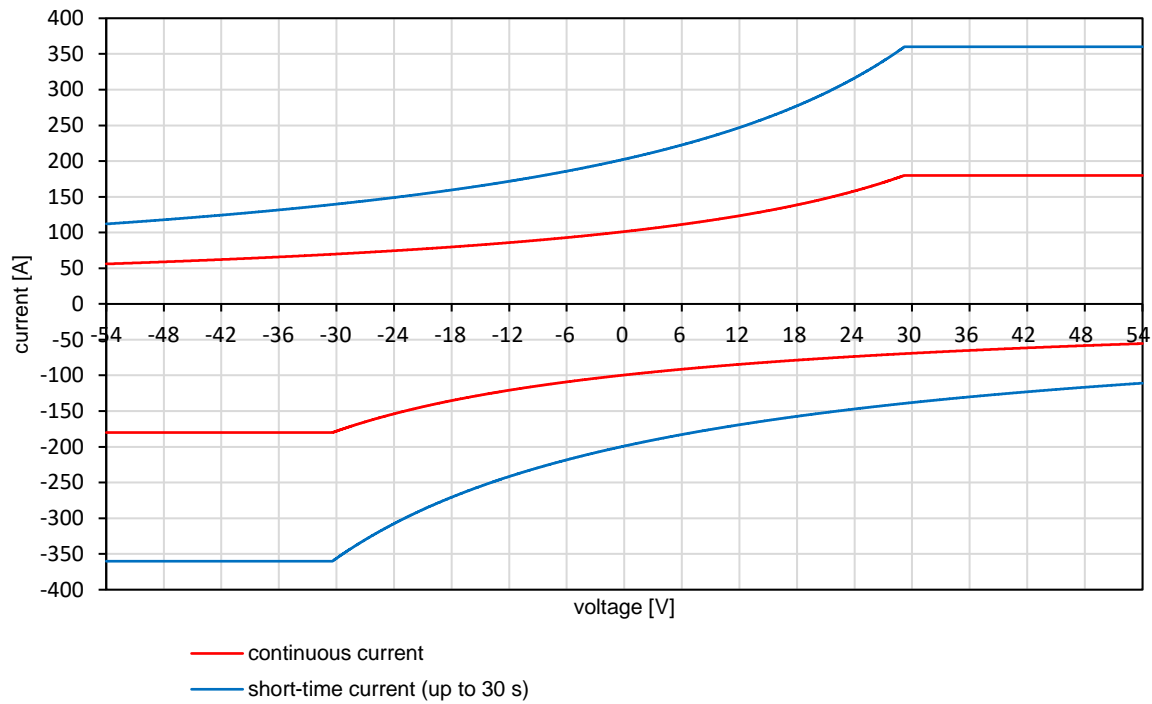
OUTPUT CURRENT CAPABILITY¹⁾ - 20 V Range



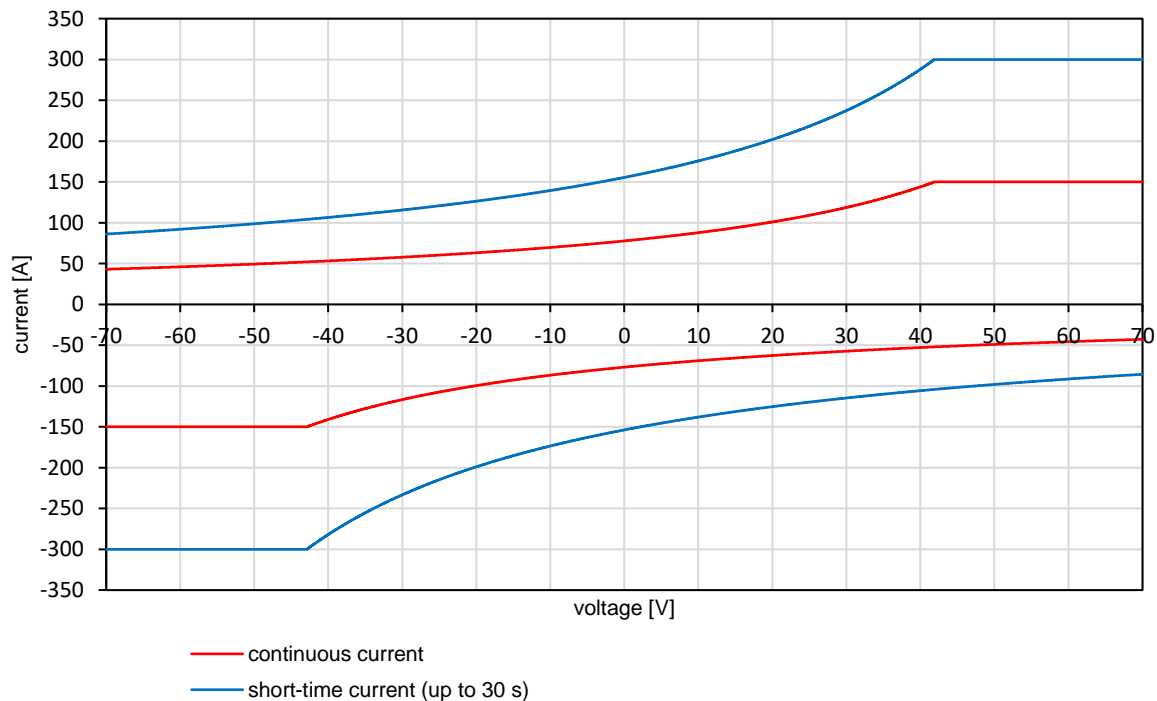
OUTPUT CURRENT CAPABILITY¹⁾ - 36 V Range



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