

## APS series of 4-quadrant amplifiers

### Options and Add-Ons



Fig. 1: 4-quadrant amplifier APS 1000

#### *The relating standards:*



IEC/EN 61000-3-2  
 IEC/EN 61000-3-3  
 IEC/EN 61000-3-11  
 IEC/EN 61000-3-12  
 IEC/EN 60146-1-1  
 IEC/EN 61000-2-2  
 IEC/EN 61000-4-8  
 IEC/EN 61000-4-11  
 IEC/EN 61000-4-13  
 IEC/EN 61000-4-14  
 IEC/EN 61000-4-17  
 IEC/EN 61000-4-27  
 IEC/EN 61000-4-28  
 IEC/EN 61000-4-29  
 IEC/EN 61000-4-34  
 IEC/EN 61131-2  
 IEC/EN 61496-1  
 IEC/EN 61800-3  
 IEC/EN 62040-2  
 MIL-STD-461  
 MIL-STD-704  
 MIL-STD-1275  
 RTCA DO-160  
 SEMI F47-0706  
 German. Lloyd

### NEW option: Constant current mode

The adjustable and desired output current is automatically regulated and stabilized according to the user's preferences, the only limitation is the amplifier's performance characteristic.

- ✓ Multiple system interfaces IEEE488, RS232, RS485, AURORA Fibre Optic
- ✓ Easy measurement of voltage and current signal with monitoring option
- ✓ More and specialized output voltage ranges
- ✓ Support for line voltage deviation
- ✓ Extended output signal bandwidth option
- ✓ Parallel operating mode and common output plugs
- ✓ Programmable internal amplifier impedance
- ✓ Constant current mode for simple generation of impressed currents
- ✓ Sink power upgrade units type RL
- ✓ Conversion transformer units type UT for adjusting special output voltages and currents
- ✓ Optical link for easy PHIL interface

VOLTAGE AND CURRENT MODE OPERATION  
REFERENCE SOURCE FOR ALL APPLICATIONS

| <b>OPT.01</b> |  | <b>IEEE488.2 Interface</b>  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
|---------------|---|---|-------|---------------|--------------|----------|-------|-----|----------|------|-----|----------|------|----|----------|------|----|-----------|------|----|-----------|------|----|-----------|-----|----|-----------|-----|----|-----------|-----|---|-----------|-----|---|-----------|-----|---|-----------|-----|---|
|               |   | integrated interface hardware plus backside 24-pin GPIB connector plug, recommended PC GPIB interface: NI GPIB-USB-HS   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| <b>OPT.05</b> |  | <b>Voltage and current measurement and monitoring</b>   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
|               |   | Galvanically isolated BNC plugs for monitoring voltage and current (includes OPT.14)  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.10        |   | RS 232 / RS 485 Interface   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.13.30     |   | Frequency (bandwidth) extension<br>DC ... 30kHz (-3dB)  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.14        |   | External input signal capability<br>0 ... $V_{ExtMax}$ ( $V_{ExtMax}$ is adjustable between $\pm 2V_p$ ... $\pm 25V_p$ )<br>OPT.14 includes a digital input filter:<br>type Bessel or Butterworth, order 1 ... 6 (adjustable)<br>Filter frequency selectable 100Hz ... 10MHz  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.xx.yy      |   | Additional built-in voltage range, where xx is the rms voltage range and yy describes the power capability depending on the selected APS  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.33.yy      |   | 0 ... $33V_{rms}$ ( $\pm 47V_{DC}$ )  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.36.yy      |   | 0 ... $36V_{rms}$ ( $\pm 51V_{DC}$ )  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.56.yy      |   | 0 ... $56V_{rms}$ ( $\pm 79V_{DC}$ )  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.60.yy      |   | 0 ... $60V_{rms}$ ( $\pm 85V_{DC}$ )  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.150.yy     |   | 0 ... $150V_{rms}$ ( $\pm 212V_{DC}$ )  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.570DC.yy   |   | 0 ... $+570V_{DC}$  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.630DC.yy   |   | 0 ... $+630V_{DC}$  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.2Q.5DC.yy  |   |   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.2Q.0DC.yy  |   |   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| NT.18         |   | Special line voltage<br>available on request in the range of $110V_{rms}$ ... $300V_{rms}$  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.21        |   | Common output<br>Common output plugs for parallel operation   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.24        |   | Programmable internal impedance   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
|               |   | <table> <tr> <th>Model</th><th>Ri max. (Ohm)</th><th>Li max. (mH)</th></tr> <tr><td>APS 1000</td><td>30000</td><td>400</td></tr> <tr><td>APS 2500</td><td>9000</td><td>120</td></tr> <tr><td>APS 5000</td><td>4500</td><td>60</td></tr> <tr><td>APS 7500</td><td>3000</td><td>40</td></tr> <tr><td>APS 10000</td><td>1800</td><td>24</td></tr> <tr><td>APS 15000</td><td>1286</td><td>17</td></tr> <tr><td>APS 20000</td><td>900</td><td>12</td></tr> <tr><td>APS 25000</td><td>750</td><td>10</td></tr> <tr><td>APS 30000</td><td>643</td><td>9</td></tr> <tr><td>APS 40000</td><td>450</td><td>6</td></tr> <tr><td>APS 50000</td><td>375</td><td>5</td></tr> <tr><td>APS 60000</td><td>321</td><td>4</td></tr> </table> | Model | Ri max. (Ohm) | Li max. (mH) | APS 1000 | 30000 | 400 | APS 2500 | 9000 | 120 | APS 5000 | 4500 | 60 | APS 7500 | 3000 | 40 | APS 10000 | 1800 | 24 | APS 15000 | 1286 | 17 | APS 20000 | 900 | 12 | APS 25000 | 750 | 10 | APS 30000 | 643 | 9 | APS 40000 | 450 | 6 | APS 50000 | 375 | 5 | APS 60000 | 321 | 4 |
| Model         | Ri max. (Ohm)   | Li max. (mH)  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 1000      | 30000   | 400   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 2500      | 9000  | 120   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 5000      | 4500  | 60  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 7500      | 3000  | 40  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 10000     | 1800  | 24  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 15000     | 1286  | 17  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 20000     | 900   | 12  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 25000     | 750   | 10  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 30000     | 643   | 9   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 40000     | 450   | 6   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 50000     | 375   | 5   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| APS 60000     | 321   | 4   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.25        |   | Constant current mode   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.30        |   | Optical link  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
|               |   | Optical interface to real time simulator<br>LC duplex interface / Aurora 8B/10B protocol / 2Gb/s data rate  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| UT.540.C      |   | Voltage transformer<br>Output voltages $400V_{rms}$ / $540V_{rms}$ , Other voltages on request  |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |
| OPT.NS        |   | Mains synchronisation APS   |       |               |              |          |       |     |          |      |     |          |      |    |          |      |    |           |      |    |           |      |    |           |     |    |           |     |    |           |     |   |           |     |   |           |     |   |           |     |   |