# HPS

## DIGITALLY CONTROLLABLE AC/DC HIGH VOLTAGE POWER SUPPLIES

- 1.5 kW - 10 kW / 1kV - 100 kV versions
- 19" rack mountable
- Best control characteristics
- Multiple interface options
- Capacitor charger option (CLD )
- ARC management (ultrafast ARCpro optional)
- Very low ripple and noise, very low EMI
- Parallel operation for power increase

AIO DIO CLD ARC PRO CUSTOM

HPS devices are digitally controlled AC driven high voltage power supplies with high power density at best output characteristics. The processor controlled supplies can flexibly be adapted to any kind of application by configuring many options. PWM controlled output parameters, small ripple and noise and stored energy, up to 93% efficiency and almost loss free switching of semiconductors makes HPS devices the most advanced AC/DC HV power supply for industrial and research applications.

## SPECIFICATIONS

| | HPS 1.5 kW | HPS 3 kW | HPS 6 kW | HPS 10 kW |
|---|---|---|---|---|
| **Power** | 1,500 W | 3,000 W | 6,000 W | 10,000 W |
| **Polarity** | factory fixed positive or negative | factory fixed positive or negative | factory fixed positive or negative | factory fixed, positive or negative |
| **Efficiency** | up to 93% | up to 93% | up to 93% | up to 93% |
| **Ripple and noise** [f >10 Hz] | $< 3 \bullet 10^{-3} \bullet V_{nom}$ ** | $< 5 \bullet 10^{-3} \bullet V_{nom}$ ** | $< 9 \bullet 10^{-3} \bullet V_{nom}$ ** | $< 9 \bullet 10^{-3} \bullet V_{nom}$ ** |
| **Stability** | 0.05 % • $V_{nom}$ * | 0.05 % • $V_{nom}$ * | 0.05 % • $V_{nom}$ * | 0.05 % • $V_{nom}$ * |
| **Voltage regulation** [$\Delta V_{out}$ / $\Delta V_{in}$] | 0.01 % [$V_{out} \geq 5$ V] | 0.01 % [$V_{out} \geq 5$ V] | 0.01 % [$V_{out} \geq 5$ V] | 0.01 % [$V_{out} \geq 5$ V] |
| **Temperatur coefficient** | $< 2 \bullet 10^{-4}$ / K | $< 2 \bullet 10^{-4}$ / K | $< 2 \bullet 10^{-4}$ / K | $< 2 \bullet 10^{-4}$ / K |
| **Supply voltage** | 190 - 264 VAC with PFC | 170 - 264 VAC with PFC | 3 x 400 VAC ± 10% | 3 x 400 VAC ± 10% |
| **Switching frequency** | 80 - 130 kHz | 70 - 90 kHz | 60 - 80 kHz | 60 - 80 kHz |
| **Set / monitor voltage** | 0 - 5 V \| opt. 0 - 10 V | 0 - 5 V \| opt. 0 - 10 V | 0 - 5 V \| opt. 0 - 10 V | 0 - 5 V \| opt. 0 - 10 V |
| **Protection** INTERLOCK, INHIBIT, | overload, ARC and short circuit, INTERLOCK, INHIBIT, overvoltage/overtemp | overload, ARC and short circuit, INTERLOCK, INHIBIT, overvoltage/overtemp | overload, ARC and short circuit, INTERLOCK, INHIBIT, overvoltage/overtemp | overload, ARC and short circuit, overvoltage/overtemp |
| **ARC Management** | ARC \| optional: ARCpro | ARC \| optional: ARCpro | ARC \| optional: ARCpro | ARC \| optional: ARCpro |
| **Filament supply** | optional | optional | optional | optional |
| **Interfaces** RS232, CAN, SPS (0-10V) | USB, AIO isolated optional: IEEE 488.2, Ethernet, RS232, CAN, SPS (0-10V) | USB, AIO isolated optional: IEEE 488.2, Ethernet, RS232, CAN, SPS (0-10V) | USB, AIO isolated optional: IEEE 488.2, Ethernet, RS232, CAN, SPS (0-10V) | USB, AIO isolated optional: IEEE 488.2, Ethernet, |
| **Case** | 19" rack mountable | 19" rack mountable | 19" rack mountable | 19" rack mountable |
| **Dimensions** (L/W/H) | 410-550 mm / 19"/ 2-4U | 410-550 mm / 19"/ 2-4U | 410-550 mm / 19"/ 2-4U | 500 mm / 19"/ 4U |

*) for 8h, after 0.5h warmup **) option VLN: $< 5 \bullet 10^{-4} \bullet V_{nom}$ (not available for all configurations)

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### CONFIGURATIONS

| MODEL | $V_{nom}$ | $I_{nom}$ | HEIGHT/DEPTH | | HV CONNECTOR |
|---|---|---|---|---|---|
| **HPS 19" - 1.5 kW** | | | | | |
| HPx 10 158 152 | 1 kV | 1.5 A | 2U | | SHV |
| HPx 20 757 152 | 2 kV | 750 mA | 2U | | SHV |
| HPx 30 507 152 | 3 kV | 500 mA | 2U | | SHV |
| HPx 40 387 152 | 4 kV | 380 mA | 2U | | SHV |
| HPx 60 257 152 | 6 kV | 250 mA | 2U | | L11 |
| HPx 80 197 152 | 8 kV | 190 mA | 2U | | L11 |
| HPx 100 157 152 | 10 kV | 150 mA | 2U | | L11 |
| HPx 120 137 152 | 12 kV | 125 mA | 2U | | G21 |
| HPx 150 107 152 | 15 kV | 100 mA | 2U | 410 mm | G21 |
| HPx 200 756 152 | 20 kV | 75 mA | 2U | 410 mm | G21 |
| HPx 300 506 152 | 30 kV | 50 mA | 3U | 410 mm | G40 |
| HPx 400 386 152 | 40 kV | 38 mA | 3U | 410 mm | G40 |
| HPx 500 306 152 | 50 kV | 30 mA | 3U | 500 mm | G60 |
| HPx 600 256 152 | 60 kV | 25 mA | 3U | 500 mm | G60 |
| HPx 800 206 152 | 80 kV | 20 mA | 4U | 550 mm | G100 |
| HPx A00 156 152 | 100 kV | 15 mA | 4U | 550 mm | G100 |
| **HPS 19" - 3 kW** | | | | | |
| HPx 10 308 302 | 1 kV | 3 A | 2U | 410 mm | SHV |
| HPx 20 158 302 | 2 kV | 1.5 A | 2U | 410 mm | SHV |
| HPx 30 108 302 | 3 kV | 1 A | 2U | 410 mm | SHV |
| HPx 40 757 302 | 4 kV | 750 mA | 2U | 410 mm | SHV |
| HPx 60 507 302 | 6 kV | 500 mA | 2U | 410 mm | L11 |
| HPx 80 387 302 | 8 kV | 375 mA | 2U | 410 mm | L11 |
| HPx 120 257 302 | 12 kV | 250 mA | 2U | 410 mm | G21 |
| HPx 150 207 302 | 15 kV | 200 mA | 2U | 410 mm | G21 |
| HPx 200 157 302 | 20 kV | 150 mA | 2U | 410 mm | G21 |
| HPx 300 107 302 | 30 kV | 100 mA | 3U | 410 mm | G40 |
| HPx 400 756 302 | 40 kV | 75 mA | 3U | 410 mm | G40 |
| HPx 500 606 302 | 50 kV | 60 mA | 3U | 500 mm | G60 |
| HPx 600 506 302 | 60 kV | 50 mA | 3U | 500 mm | G60 |
| HPx 800 386 302 | 80 kV | 38 mA | 4U | 550 mm | G100 |
| HPx A00 306 302 | 100 kV | 30 mA | 4U | 550 mm | G100 |
| **HPS 19" - 6 kW** | | | | | |
| HPx 10 608 602 | 1 kV | 6 A | 4U | 500 mm | G11 |
| HPx 20 308 602 | 2 kV | 3 A | 4U | 500 mm | L11 |
| HPx 30 208 602 | 3 kV | 2 A | 4U | 500 mm | L11 |
| HPx 40 158 602 | 4 kV | 1.5 A | 4U | 500 mm | L11 |
| HPx 50 128 602 | 5 kV | 1.2 A | 4U | 500 mm | L11 |
| HPx 60 108 602 | 6 kV | 1 A | 4U | 500 mm | L11 |
| HPx 80 757 602 | 8 kV | 750 mA | 4U | 500 mm | L11 |
| HPx 100 607 602 | 10 kV | 600 mA | 4U | 500 mm | L11 |
| HPx 200 307 602 | 20 kV | 300 mA | 4U | 500 mm | G21 |
| **HPS 19" - 10 kW** | | | | | |
| HPx 10 109 103 | 1 kV | 10 A | 4U | 500 mm | G11 |
| HPx 20 508 103 | 2 kV | 5 A | 4U | 500 mm | L11 |
| HPx 30 348 103 | 3 kV | 3.4 A | 4U | 500 mm | L11 |
| HPx 40 258 103 | 4 kV | 2.5 A | 4U | 500 mm | L11 |
| HPx 50 208 103 | 5 kV | 2 A | 4U | 500 mm | L11 |
| HPx 60 178 103 | 6 kV | 1.7 A | 4U | 500 mm | L11 |
| HPx 80 138 103 | 8 kV | 1.3 A | 4U | 500 mm | L11 |
| HPx 100 108 103 | 10 kV | 1 A | 4U | 500 mm | L11 |
| HPx 200 507 103 | 20 kV | 500 mA | 4U | 500 mm | G21 |

### OPTIONS & ORDER INFO

| OPTION | ORDER INFO | EXAMPLE |
|---|---|---|
| Polarity | positive: **x = p**, negative: **x = n** | HP**p** 10 158 152 |
| Capacitor charger | **CLD** | |
| Front panel operation with LCD | **FP** | |
| Interface options | controller area network: **CAN** \| industry analog I/O: **SPS** \| EtherCAT: **ETC** \| Ethernet: **ETH** \| IEEE 488: **IEE** \| RS232: **RS2** | |
| Very low noise: $< 5 \bullet 10^{-4} \bullet V_{nom}$ (*not available for all configurations) | **VLN** | |
| ARC management pro (ultrafast) | **ARCpro** | |
| ARC current limitation | **ACL** | |
| Two HV output connectors | **2HC** | |
| Integrated filament supply | **FCS** | |
| Higher voltage stability: $< 1 \bullet 10^{-4} \bullet V_{nom}$ (*not available for all configurations) | **HVS** | |
| Wide range input 400 - 480V +/- 10% (6 and 10kW only) | **WR4** | |
| Extended operating area | **EOA** | |