



Elektro-Automatik



PS 10000 2U

Compact DC Power Solutions with Unmatched Efficiency | 1.5 kW | 3.0 kW

Wide Autoranging Output: Provides voltages from 0-60 V to 0-1500 V and currents up to 120 A, offering full power over a broad range of operating conditions.

High Efficiency: Achieves efficiency levels exceeding 95%, minimizing energy loss and heat generation.

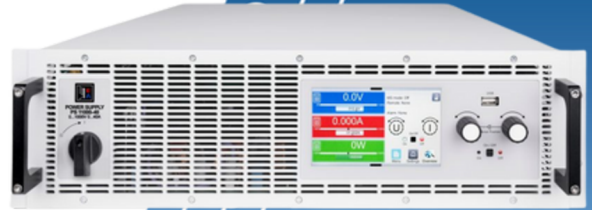
Scalable Design: Supports parallel operation of up to 64 units.

Advanced Interfaces: Includes built-in USB, Ethernet, and analog interfaces, with optional industrial interfaces like Profinet and CANopen for seamless integration.

Intuitive Control: Features a 5-inch color TFT touchscreen for easy operation and monitoring, plus adjustable control speeds for precise performance.

EA-PS 10000 2U 1.5 kW - 3.0 kW

Programmable DC power supply



Features

- Wide range input, 110 V - 240 V \pm 10% 1ph AC
- Active Power-Factor-Correction, typical 0.99
- Very high efficiency, up to over 95%
- Voltage from 0-60 V up to 0-1500 V
- Currents from 0-6 A up to 0-120 A
- Flexible power-regulated DC output stages (autoranging)
- Regulation modes CV, CC, CP with fast crossover
- Digital regulation, high resolution with 16-bit ADCs and DACs, selection of control speed: Normal, Fast, Slow
- Color 5" TFT display with touch control and intuitive user interface
- Galvanically isolated Share-Bus for parallel operation of all power classes in the 10000 series
- Master-Slave Bus for parallel operation of up to 64 units of all power classes in the 10000 series
- Command languages and drivers: SCPI and ModBus, LabVIEW, IVI

Built-in interfaces

- USB
- Ethernet
- Analog
- USB (front panel)
- Master-Slave-Bus
- Share-Bus

Optional interfaces

- CAN
- CANopen
- RS232
- Profibus
- EtherCAT
- Profinet, with one or two ports
- Modbus, with one or two ports
- Ethernet, with one or two ports

Software

- EA - Power Control



SPECIFICATIONS

AC Input

- **Voltage, Phases:** 110 V / 120 V / 208 V / 220 V / 230 V / 240 V \pm 10%, 1ph AC (110 V / 120 V 1ph with derating, see model table)
- **Frequency:** 45-66 Hz
- **Power Factor:** >0.99
- **Leakage Current:** < 3.5 mA
- **Overvoltage Category:** 2
- **Pollution Degree:** 2

DC Output (static)

- **Load Regulation CV:** \leq 0.05% FS (0 - 100% load, constant input voltage and constant temperature)
- **Line Regulation CV:** \leq 0.01% FS (110 V - 240 V AC +10% input voltage, constant load and constant temperature)
- **Stability CV:** \leq 0.02% FS (Over 8 hrs interval following 30 minutes warm-up, constant input voltage, load, and temperature)
- **Temperature Coefficient CV:** \leq 30 ppm/ $^{\circ}$ C (Following 30 minutes warm-up)
- **Compensation (Remote Sense):** \leq 5% UNominal
- **Load Regulation CC:** \leq 0.1% FS (0 - 100% load, constant input voltage and constant temperature)
- **Line Regulation CC:** \leq 0.01% FS (110 V - 240 V AC +10% input voltage, constant load and constant temperature)
- **Stability CC:** \leq 0.02% FS (Over 8 hrs interval following 30 minutes warm-up, constant input voltage, load, and temperature)
- **Temperature Coefficient CC:** \leq 50 ppm/ $^{\circ}$ C (Following 30 minutes warm-up)
- **Load Regulation CP:** \leq 0.3% FS (0 - 100% load, constant input voltage and constant temperature)
- **Load Regulation CR:** \leq 0.3% FS + 0.1% FS current (0 - 100% load, constant input voltage and constant temperature)

Protective Functions

- **Overvoltage Protection (OVP):** Adjustable 0 - 110% UNominal
- **Overcurrent Protection (OCP):** Adjustable 0 - 110% INominal
- **Overpower Protection (OPP):** Adjustable 0 - 110% PNominal
- **Overtemperature Protection (OT):** DC output shuts down in case of insufficient cooling

DC Output (Dynamic)

- **Rise Time 10 - 90% CV:** \leq 20 ms
- **Fall Time 90 - 10% CV:** \leq 20 ms
- **Rise Time 10 - 90% CC:** \leq 10 ms
- **Fall Time 90 - 10% CC:** \leq 10 ms

Display Accuracy

- **Voltage:** \leq 0.05% FS
- **Current:** \leq 0.1% FS

Insulation

- **AC Input to DC Output:** 3750 Vrms (1 minute, creepage distance >8 mm)
- **AC Input to Case (PE):** 2500 Vrms
- **DC-Output to case (PE):** Depending on the model, see model table
- **DC Output to Interfaces:** 1000 V DC (models up to 360 V output), 1500 V DC (models from 500 V output)

Interfaces (Digital)

- **Built-in, Galvanically Isolated:** USB, Ethernet (100 MBit), USB front panel, all for communication
- **Optional, Galvanically Isolated:** CAN, CANopen, RS232, Modbus TCP, Profinet, Profibus, EtherCAT, Ethernet

Interfaces (Analog)

- **Built-in, Galvanically Isolated:** 15 pole D-Sub
- **Signal Range:** 0 - 10 V or 0 - 5 V (switchable)
- **Inputs:** U, I, P, remote control on/off, DC output on/off
- **Outputs:** Monitor U and I, alarms, reference voltage, status DC, status CV/CC
- **Accuracy U / I / P:** 0 - 10 V: \leq 0.2%, 0 - 5 V: \leq 0.4%

Device Configuration

- **Parallel Operation:** Up to 64 units of any power class in the 10000 series, with Master-Slave Bus and Share Bus

Safety and EMC

- **Safety Standards:** EN 61010-1, IEC 61010-1, UL 61010-1, CSA C22.2 No 61010-1, BS EN 61010-1
- **EMC Compliance:** EN 55011 (Class B), CISPR 11 (Class B), FCC 47 CFR part 15B (Class B)
- **EN 61326-1 Includes tests:** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
- **Safety Protection Class:** Class 1
- **Ingress Protection:** IP20

Environmental Conditions

- **Operating Temperature:** 0–50 $^{\circ}$ C (32–122 $^{\circ}$ F)
- **Storage Temperature:** -20–70 $^{\circ}$ C (-4–158 $^{\circ}$ F)
- **Humidity:** \leq 80% relative humidity, non-condensing
- **Altitude:** \leq 2000 m (\leq 6,600 ft)
- **Pollution Degree:** 2

Mechanical Construction

- **Cooling:** Forced air flow from front to rear (temperature-controlled fans)
- **Dimensions (W x H x D):** 19" x 2U x 477 mm
- **Weight:** 1.5 kW unit: 10.5 kg (23.1 lb), 3.0 kW unit: 11.7 kg (25.8 lb)

Available Models

SKU	PS 10060-60	PS 10080-60	PS 10200-25	PS 10360-15	PS 10500-10	PS 10750-06
Voltage Range (V)	0 - 60 V	0 - 80 V	0 - 200 V	0 - 360 V	0 - 500 V	0 - 750 V
Ripple rms CV	10 mV BW 300 kHz	10 mV BW 300 kHz	30 mV BW 300 kHz	30 mV BW 300 kHz	40 mV BW 300 kHz	50 mV BW 300 kHz
Ripple and Noise p-p CV	100 mV BW 20 MHz	100 mV BW 20 MHz	300 mV BW 20 MHz	300 mV BW 20 MHz	500 mV BW 20 MHz	800 mV BW 20 MHz
Current Range (A)	0 - 60 A	0 - 60 A	0 - 25 A	0 - 15 A	0 - 10 A	0 - 6 A
Power Range (W)	0 - 1500 W	0 - 1500 W	0 - 1500 W	0 - 1500 W	0 - 1500 W	0 - 1500 W
Output Capacity (μF)	8640 μF	8640 μF	800 μF	330 μF	120 μF	90 μF
Efficiency (up to)	94.0%	94.0%	94.5%	94.5%	95.0%	95.0%

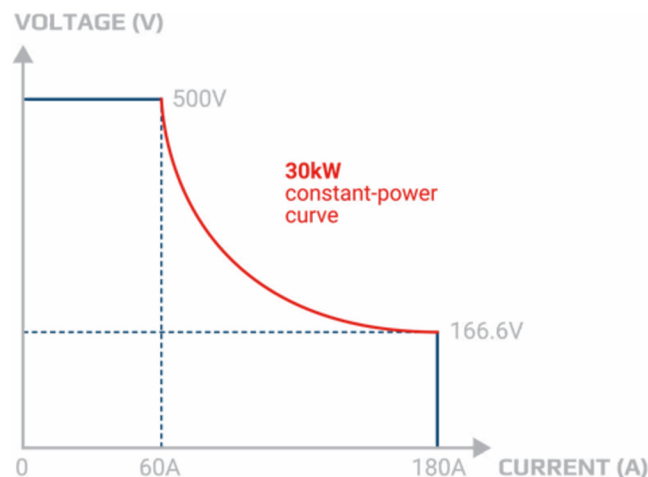
SKU	PS 10060-120	PS 10080-120	PS 10200-50	PS 10360-30	PS 10500-20	PS 10750-12	PS 11000-10	PS 11500-06
Voltage Range (V)	0 - 60 V	0 - 80 V	0 - 200 V	0 - 360 V	0 - 500 V	0 - 750 V	0 - 1000 V	0 - 1500 V
Ripple rms CV	10 mV BW 300 kHz	10 mV BW 300 kHz	30 mV BW 300 kHz	30 mV BW 300 kHz	40 mV BW 300 kHz	50 mV BW 300 kHz	60 mV BW 300 kHz	70 mV BW 300 kHz
Ripple and Noise pp CV	100 mV BW 20 MHz	100 mV BW 20 MHz	300 mV BW 20 MHz	300 mV BW 20 MHz	500 mV BW 20 MHz	800 mV BW 20 MHz	1000 mV BW 20 MHz	1500 mV BW 20 MHz
Current Range (A)	0 - 120 A	0 - 120 A	0 - 50 A	0 - 30 A	0 - 20 A	0 - 12 A	0 - 10 A	0 - 6 A
Power Range (W)	0 - 3000 W	0 - 3000 W	0 - 3000 W	0 - 3000 W	0 - 3000 W	0 - 3000 W	0 - 3000 W	0 - 3000 W
Output Capacity (μF)	17280 μF	17280 μF	1600 μF	660 μF	240 μF	180 μF	90 μF	60 μF
Efficiency (up to)	94.0%	94.0%	94.5%	94.5%	95.0%	95.0%	95.0%	95.0%

General

The PS 10000 2U series DC power supplies from EA Elektro-Automatik efficiently convert grid energy into regulated DC output with efficiency up to 96%. Compatible with a wide range of input voltages and featuring both single-phase and three-phase models, these devices cater to global applications. The flexible autoranging output enables wide voltage and current ranges, from 0-60 V to 0-2000 V and 0-6 A to 0-1000 A in a single unit. The modular design allows for parallel operation of up to 64 units, delivering up to 1920 kW of power for high-performance systems. Advanced features such as a built-in function generator and comprehensive safety protections ensure the PS 10000 2U series meets the demands of laboratories and industrial environments.

DC Output

The PS 10000 2U delivers flexible DC output stages with voltage ranges from 0-60 V to 0-2000 V and current ranges up to 120 A. Its autoranging technology allows a single device to accommodate a wide spectrum of applications, ensuring full power delivery across varying conditions. This adaptability reduces the need for multiple power supplies, making the system more versatile and cost-effective.



The Principle of Autoranging

Autoranging ensures that the PS 10000 2U series delivers maximum power across a wide range of voltage and current combinations. This capability allows engineers to replace multiple fixed-range power supplies with a single device, streamlining system design and reducing equipment costs. Autoranging expands operational flexibility, enabling users to address complex and dynamic testing requirements with ease.

Interfaces

The PS 10000 2U series comes standard with galvanically isolated interfaces, including USB, Ethernet, and analog connections for control and monitoring. Optional plug-and-play industrial interfaces, such as CAN, Profinet, EtherCAT, and Modbus, enhance connectivity and ensure seamless integration into diverse automated setups. The analog interface can be configured for voltage, current, power, and resistance monitoring, providing flexibility and precision.

AC Connection

The PS 10000 2U series is equipped with Active Power Factor Correction (PFC), optimizing efficiency and minimizing energy waste. Supporting input voltages from 110/120 V to 240 V AC for single-phase and 208 V to 480 V AC for three-phase operation, the devices adapt automatically to global mains supplies. A built-in derating mechanism ensures reliable performance in lower-voltage grids such as 110/120 V and 208 V, without requiring additional manual configuration.

DC Connection

The DC output of the PS 10000 2U series connects through robust copper rails at the rear of the device. For higher-performance systems, multiple devices can be easily linked in parallel using vertical copper rails, ensuring seamless scalability. A contact protection cover provides safety during operation, making it ideal for industrial and laboratory setups.

High-Performance Systems

The PS 10000 2U series supports the creation of high-power systems up to 1920 kW by connecting multiple devices in parallel. A single 19" cabinet with 42U can house up to 12 units, delivering a combined power of 240 kW while occupying minimal floor space. The modular and scalable design ensures flexibility for both laboratory and industrial applications, making it an ideal choice for high-demand environments.

Master-Slave-Bus and Share-Bus

The integrated Master-Slave Bus and Share Bus simplify multi-device configurations by enabling them to operate as a single cohesive system. The Master-Slave Bus consolidates data such as total power and current, displaying it on the master unit while managing alarms and warnings from slave devices. The Share Bus distributes loads evenly across connected units, optimizing performance and ensuring system reliability.



Example Representation

A fully assembled and operational 240 kW system.

Applications

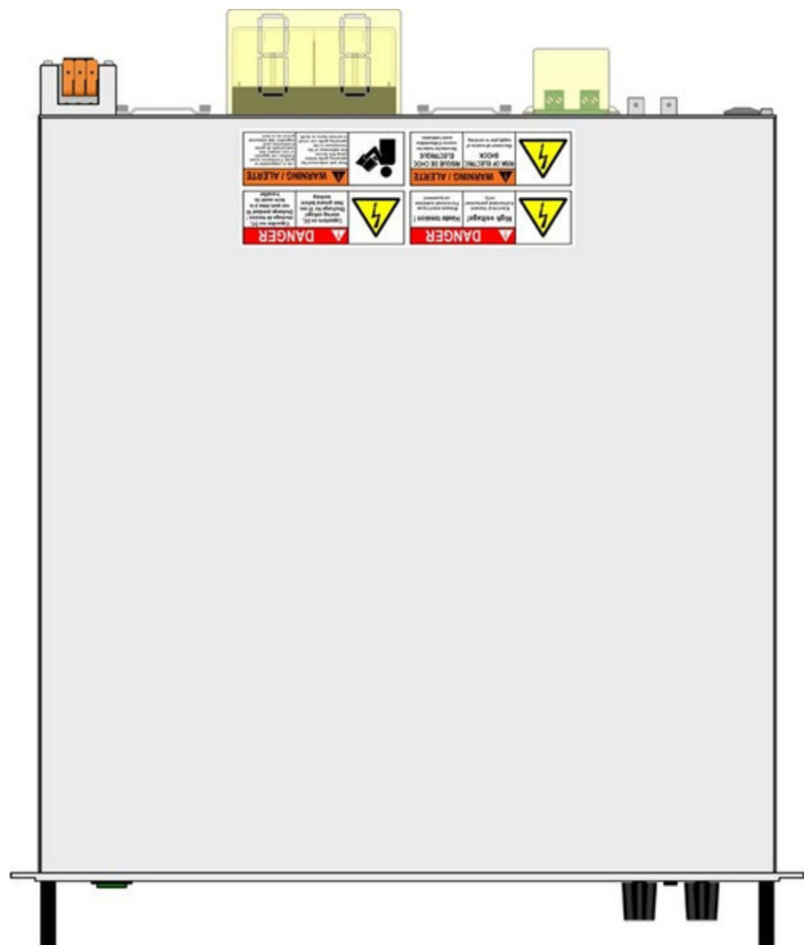
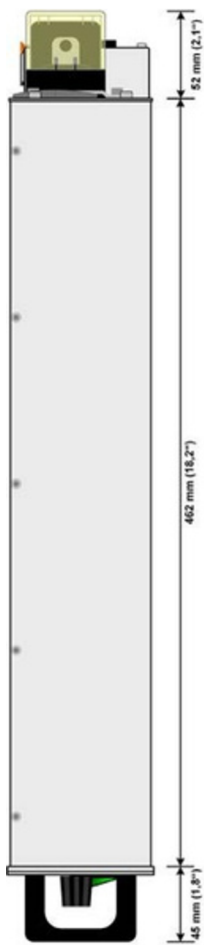
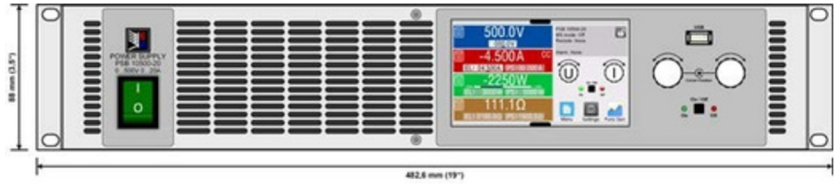
Relay Testing in Production

Relay manufacturers depend on precise and reliable testing to ensure the performance and quality of their products during production. The PS 10000 2U series provides highly accurate voltage and current control, making it an ideal solution for testing key parameters such as operating, holding, and decay currents in relay coils. For contact testing, it evaluates current-carrying capacity, contact resistance, and disconnect thresholds with precision. These capabilities, combined with its flexible interfaces and advanced safety features, allow seamless integration into automated test systems, eliminating the need for additional measuring equipment and improving production efficiency.

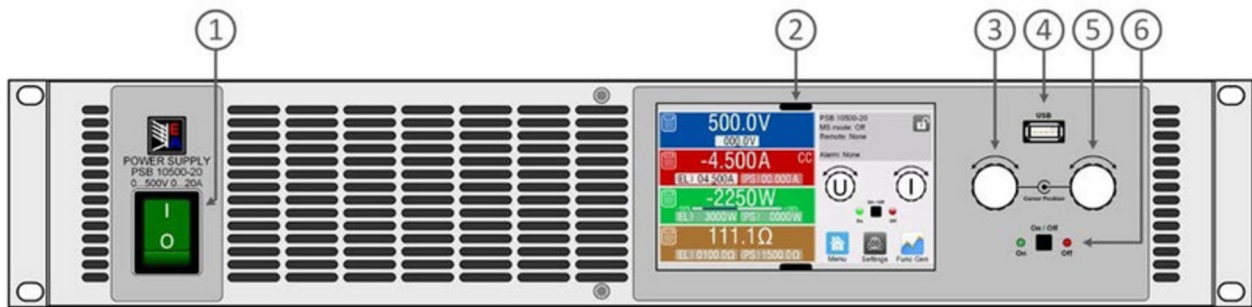
On-Board Charger Testing

Testing on-board chargers (OBCs) requires a system capable of simulating a wide range of operating conditions with precision and reliability. The PS 10000 2U series meets these demands with its integrated sequencing and logging features, enabling the creation and reproduction of detailed test procedures. Adjustable voltage regulation speeds (Normal, Fast, Slow) prevent conflicts between the charger and the testing device's control loops, ensuring smooth and accurate performance. For comprehensive testing that involves both sourcing and sinking power, the PS 10000 2U series pairs effortlessly with EA's ELR 10000 series electronic load, delivering a complete, high-accuracy solution for automotive and industrial applications.

Technical Drawing PS 10000 2U

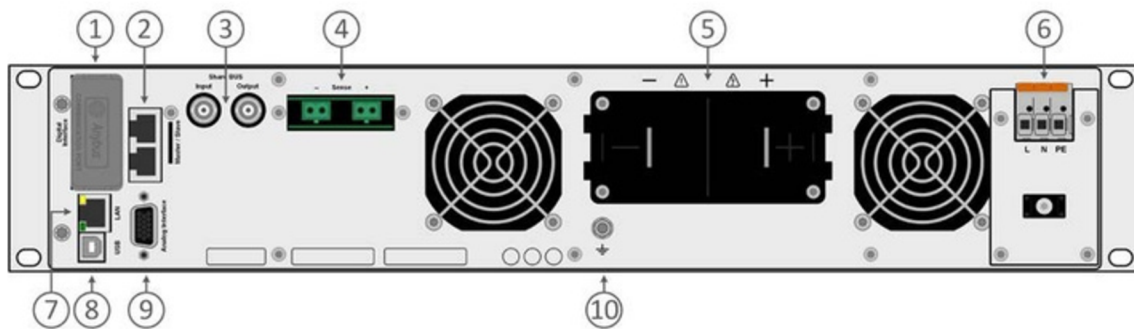


Front Panel Description PS 10000 2U



1. Main switch
2. TFT control interface, interactive operation and display
3. Rotary knob with push-button action, for settings and control
4. USB host, uses USB sticks for data logging and sequencing
5. Rotary knob with push-button action, for settings and control
6. On / Off push-button with LED status display

Rear Panel Description PS 10000 2U



1. Slot for interfaces
2. Master-Slave-Bus interface to set up a system for parallel connection
3. Share-Bus Interface to set up a system for parallel connection
4. Output voltage Remote Sense input terminal
5. Output terminal, Copper busbar
6. Mains input terminal
7. Ethernet interface
8. USB Interface
9. Connector (DB15 Female) for isolated analog program, monitor and other functions
10. Grounding connection screw (PE)

W5 Engineering
Phone: (971) 244-8200
Email: help@W5engineering.com
www.W5engineering.com/eapowered

EA Elektro-Automatik Inc.
9845 Via Pasar
San Diego, CA 92126 USA

