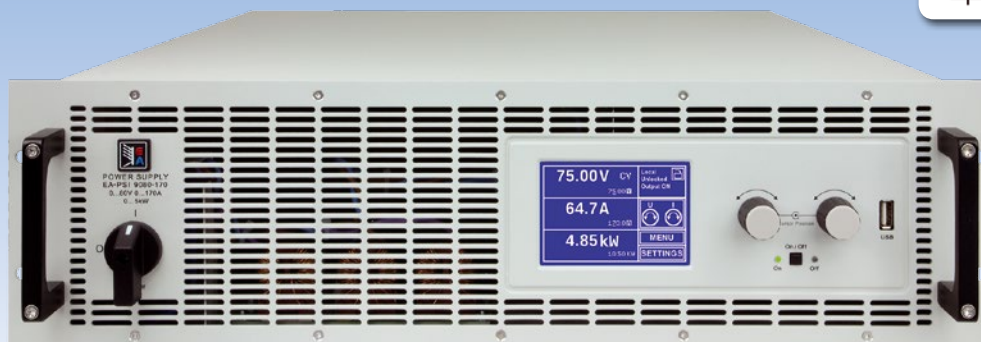
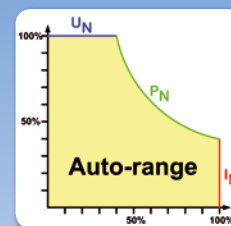




EA-PSI 9080-170 3U

- 多相输入340...460VAC
- 效率高达95.5%
- 输出功率有: 0...3.3kW, 0...5kW, 0...6.6kW, 0...10kW, 0...15kW, 还可扩展至150kW
- 输出电压: 0...40V 至 0...1500V
- 输出电流: 0...30A 至 0...510A 还可扩展至0...5100A
- 灵活的功率调整输出
- 各种保护功能 (OVP, OCP, OPP, OTP)
- 直观的触摸屏可显示数值、状态与通知
- 能自动检测的远程感测端
- 隔离模拟接口
 - 通过 0...10V或0...5V电压可对U / I / P编程
 - 通过 0...10V或0...5V电压可监控U / I
- 真实函数发生器
- 光伏方阵模拟功能
- 内阻模拟与调整
- 用户配置文档存储库
- 温控风扇制冷
- 符合SELV标准 (EN 60950)的40V产品型号
- 配有USB端口
- 可选数字接口模块
- 支持SCPI指令语言带菜单的图形显示器

- Multi-phase input 340...460V_{AC}
- High efficiency up to 95,5%
- Output power ratings: 0...3.3kW, 0...5kW, 0...6.6kW, 0...10kW, 0...15kW, expandable up to 150kW
- Output voltages: 0...40V up to 0...1500V
- Output currents: 0...30A up to 0...510A Expandable up to 0...5100A
- Flexible, power regulated output stage
- Various protection circuits (OVP, OCP, OPP, OTP)
- Intuitive touch panel with display for values, status and notifications
- Remote sense with automatic detection
- Galvanically isolated analog interface with
 - U / I / P programmable via 0...10V or 0...5V
 - U / I monitoring via 0...10V or 0...5V
- Integrated true function generator
- Photovoltaic array simulation
- Internal resistance simulation and regulation
- Memory bank for user profiles
- Temperature controlled fans for cooling
- 40V models according to SELV (EN 60950)
- USB port integrated
- Optional, digital interface modules
- SCPI command language supported

概要

EA-PSI 9000 3U 系列是一款由微处理器控制的高效实验室电源，其标准型号配备多种功能和特征。交互式菜单导航功能让用户使用起来极其方便、有效。

可对用户和进程文档进行编辑、存储，以及再次上载，从而改善重复测试或其它应用。

为了达到更大的输出功率，可配置高达150kW和42U的机柜，以便满足客户需求。也可见128页。

General

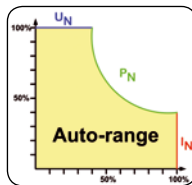
The microprocessor controlled high efficiency laboratory power supplies of series EA-PSI 9000 3U offer multiple functions and features in their standard version. User-friendly, interactive menu navigation makes the use of this equipment remarkably easy and most effective.

User and process profiles can be edited, saved and archived so that the reproducibility of a test or other application is improved.

In order to achieve even higher output power, cabinets with up to 150kW and up to 42U size can be configured to suit the user's requirements. Also see page 128.

功率

本系列所有产品的输出功率可灵活变化，在低电流时输出更高电压，或在低电压时输出更大电流，都由最大额定输出功率来限制。其设定功率都可调。因此一台该仪器能涵盖大范围的应用领域。



Power

All models are equipped with a flexible auto-ranging output stage which provides a higher output voltage at lower output current, or a higher output current at lower output voltage, always limited to the max. nominal output power. The power set value is adjustable with these models. Therefore, a wide range of applications can already be covered by the use of just one single unit.

输入

本系列所有型号都采用主动式PFC功率因数校正线路，专为在340V - 460V AC三相供电条件下操作而设计。而且，根据客户需求，可定制15kW型号或用其组建的机柜组合，适合于588...796V（加上中心点）输入电压下操作。

Input

The device are equipped with an active Power Factor Correction circuit and are designed for a usage on a three-phase supply with 340V - 460V AC. Alternatively, models with 15kW or cabinets based on these models can be delivered with input range 588...796V AC (plus central point) upon request.

直流输出

本系列有多款不同型号，可选择0...40V和0...1500V输出电压，0...40A和0...510A输出电流，0...3.3kW，0...5kW，0...6.6kW，0...10kW或0...15kW输出功率的各个型号。输出端位于产品后板。

DC output

DC output voltages between 0...40V and 0...1500V, output currents between 0...40A and 0...510A and output power ratings of 0...3.3kW, 0...5kW, 0...6.6kW, 0...10kW or 0...15kW are available. The output terminal is located on the rear panel.

保护功能

为保护连接负载，可设定一过压保护极限值(OVP)。，以及过流(OCP)与过功率(OPP)保护极限值。

Protective features

For protection of the equipment connected, it is possible to set an overvoltage protection threshold (OVP), as well as one for overcurrent (OCP) and overpower (OPP).

一旦因任何缘故超过了这三个极限值中的一个，直流输出会立即切断，在显示器和接口端还会发出一状态信号。

As soon as one of these thresholds is reached for any reason, the DC output will be immediately shut off and a status signal will be generated on the display and via the interfaces.

本产品还有过温保护，如果产品过热，它会关断直流输出。

There is furthermore an overtemperature protection, which will shut off the DC output if the device overheats.

远程感测端

远程感测输入端可直接连到负载设备，以补偿连线上一定程度的压降。如果感测输入端已接到负载上，本电源会自动检测并调整输出电压，以确保负载获得准确所需的电压值。

Remote sense

The standard sense input can be connected directly to the load in order to compensate voltage drops along the power cables up to a certain level. If the sense input is connected to the load, the power supply will adjust the output voltage automatically to make ensure the accurate required voltage is available at the load.

显示器和控制键

图形显示器清晰显示输出电压/电流/功率的设定与实际值。LCD显示器为触摸式，用手指即可轻易控制产品所有功能。

Display and controls

Set values and actual values of output voltage, output current and output power are clearly represented on the graphic display. The LC display is touch sensitive and can be intuitively used to control all functions of the device with just a finger.

可用旋钮或者直接从数字键盘输入来调节设定电压、电流和、功率或内阻（内阻模拟）。

Set values of voltage, current, power or resistance (internal resistance simulation) can be adjusted using the rotary knobs or entered directly via a numeric pad.

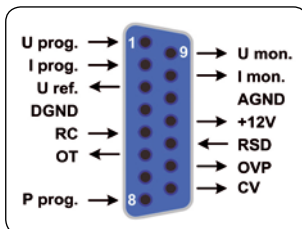
为避免误操作，可锁定所有操作控制键。

To prevent unintentional operations, all operation controls can be locked.

模拟接口

产品后面板上装有一隔离模拟接口。它提供模拟接口输入脚，接上0V...10V或0V...5V控制电压，可设置0...100%的设定电压、电流与功率。

模拟输出脚接上0V...10V或0V...5V电压，可监控输出电压与电流。此外，还有几个输入脚和输出脚，可用来控制和监控产品状态。



Analog interface

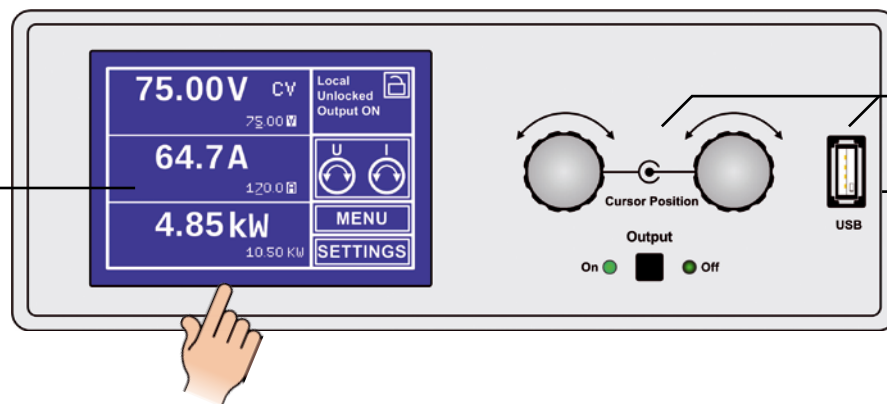
There is a galvanically isolated analog interface terminal, located on the rear of the device. It offers analog inputs to set voltage, current and power from 0...100% through control voltages of 0V...10V or 0V...5V.

To monitor the output voltage and current, there are analog outputs with voltage ranges of 0V...10V or 0V...5V. Also, several inputs and outputs are available for controlling and monitoring the device status.

显示器与控制面板

Display and control panel

触摸屏显示器
Display with touch panel



参数调节用旋钮
Knobs for comfortable value adjustment

上传与保存函数用USB端口
USB port for loading and saving functions

函数发生器

本系列产品都具有一可形成如下典型函数的真实函数发生器，并能将这些函数曲线应用于输出电压或输出电流上。发生器可通过前板的触摸屏设置或某一数字接口远程配置。

预定义函数会为用户提供所有必要的参数，如Y偏差值，时间/频率或幅度，一套完整的配置参数。

Function generator

All models within this series include a true function generator which can generate typical functions, as displayed in the figure below, and apply them to either the output voltage or the output current. The generator can be completely configured and controlled by using the touch panel on the front of the device, or by remote control via one of the digital interfaces.

The predefined functions offer all necessary parameters to the user, such as Y offset, time / frequency or amplitude, for full configuration ability.



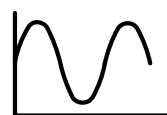
Dreieck
三角形



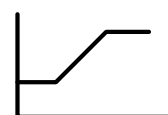
Rechteck
矩形



Trapez
梯形



Sinus
正弦



Rampe
坡行



DIN 40839

除了基于任意发生器产生的标准函数外，它还可形成某些复杂的函数，并分为多达100组序列。这些一般用于研发和生产的测试上。

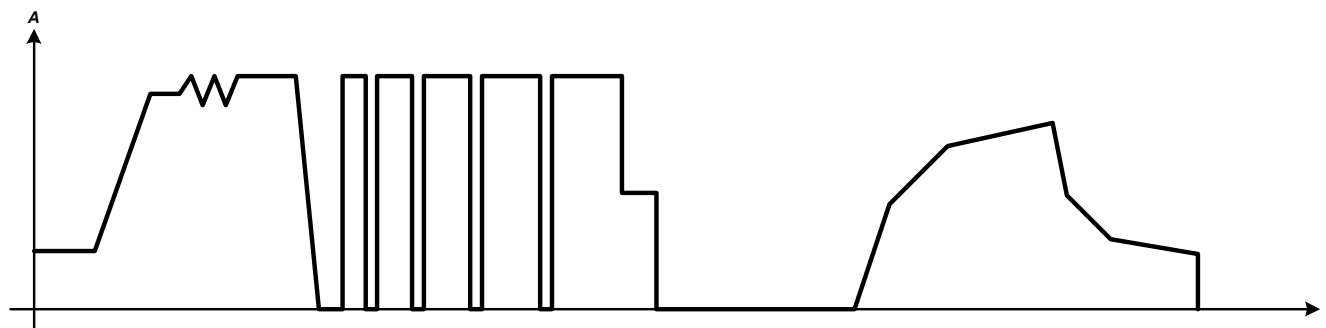
通过前板的USB端口可将这些序列上载使用或存储于一标准U盘上，这样方便更换不同的测试序列。

下图是一个任意发生器可实现的由40个序列组成的复杂曲线，仅为虚构范例。可以在产品外面或者于产品上创建，然后上载使用或保存：

Additionally to the standard functions, which are all based upon a so-called arbitrary generator, this base generator is accessible for the creation and execution of complex sets of functions, separated into up to 100 sequences. Those can be used for testing purpose in development and production.

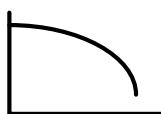
The sequences can be loaded from and saved to a standard USB flash drive via the USB port on the front panel, making it easy to change between different test sequences.

The figure below shows a fictional example of a complex function of 40 sequences, as it can be realised with the arbitrary generator. The function can be created on the device or externally and then loaded or saved:



此外还有一个XY发生器，能产生如UI或IU这类的函数，一般用户以表格（CSV文档）形式定义，然后从U盘上上传。

针对光伏相关的测试，还可形成PV曲线，当做用户可调关键参数。甚至通过后续的固件更新，可安装更多的曲线特性，供用户选择。



There is furthermore a XY generator, which is used to generate other functions like UI or IU, which are defined by the user in form of tables (CSV file) and then loaded from USB drive.

For photovoltaics related tests, a PV curve can be generated and used from user-adjustable key parameters. Even more characteristics can be installed for user selection by applying future firmware updates.

扩展功能

按照客户需求可将多个产品组合成不同的机柜，最高可做成42U的机柜，从而获得高达150kW的总功率。

如想获得更高的总输出功率，可以将PSI 9000 2U与PSI 9000 3U系列某些合适的型号（每台5-15kW）组合安装到机柜内。也可见128页说明。

**Extensibility**

The single units can be combined into various configurations upon request, also in cabinets of up to 42U, in order to build systems of up to 150kW total power. In order to achieve even higher total power output, the PSI 9000 2U can also be extended in the cabinet with suitable models from series PSI 9000 3U (5-15kW per unit). See page 128.

监控特性

所有型号都有电压电流阶段监控，可以检测是否过压或过流，以及欠压或欠流。监测到的结果会通过多个可选方式通知用户：

- 只显示信号；即使错误仍存在，也不影响输出。
- 警告一直持续，消除错误后必须确认该警告信息。
- 报警会暂时性地关断输出，也可发出声频信号。

Supervision features

All models offer supervision features for voltage and current steps. The supervision is configurable to monitor voltage or current over- and undershooting. As a reaction, the device can generate a notification of selectable type:

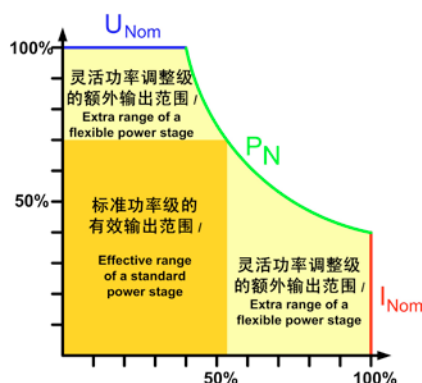
- *Signals* are displayed only; even if the fault is still active, without affecting the output.
- *Warnings* remain active and must be acknowledged after the fault is removed.
- *Alarms* will shut off the output instantly and can also be signalled acoustically.

选购件

- 适合RS232、CANopen、Modbus TCP、Profibus、Profinet/IO、Devicenet或Ethernet的绝缘数字接口模块。接口插槽位于产品后板，方便用户插上新模块或替换当前模块。产品会自动检测接口，并提示需要进行少许的配置或不用配置。也可参考122页。
- 高速跃变(仅针对1kW以上产品，见132页)*
- 水冷模块**

Options

- Digital interface modules for RS232, CANopen, Modbus TCP, Profibus, Profinet/IO, Devicenet or Ethernet. The interface slot is located on the rear panel, making it easy for the user to plug in a new interface or to replace an existing one. The interface will be automatically detected by the device and requires no or only little configuration. See page 122.
- High Speed ramping (see page 132) *
- Water Cooling **

数字接口卡 / Digital interfaces

* 并非针对所有电压 - 请咨询获取更多信息

** 一般只有200V以下型号才有，按需也可针对其它型号

* not for all voltages - please enquire for availability

** generally available for models up to 200V, for other models upon request



EA-PSI 9000 3U 3.3KW - 150KW
重载型实验室直流电源 / HEAVY DUTY LABORATORY DC POWER SUPPLIES

技术参数	Technical Data	Series EA-PSI 9000 3U / 系列
AC输入电压	Input AC	
- 电压	- Voltage standard	340...460V, 2ph-3ph
- 频率	- Frequency	45...65Hz
- 功率因数	- Power factor	>0.99
DC输出电压	Output voltage DC	
-精度度	- Accuracy	<0.1%
- 负载0-100% 时的稳定度	- Stability at 0-100% load	<0.05%
- 在 $\pm 10\% \Delta U_{IN}$ 时的稳定度	- Stability at $\pm 10\% \Delta U_{IN}$	<0.02%
- 负载从10%-100%调整需时	- Regulation 10-100% load	<2ms
- 负载从10-90%上升需时	- Slew rate 10-90%	最长30ms
- 过压保护	- Overvoltage protection	可调, 范围为0...110% U_{nenn} / adjustable, 0...110% U_{nom}
- 直流端关闭时空载放电需时	- No load discharge time on DC off	100% U 针对 / to <60V; 少于10s / less than 10s
输出电流	Output current	
- 精确度	- Accuracy	<0.2%
- 负载0-100% ΔU_A 时的稳定度	- Stability at 0-100% ΔU_{OUT}	<0.15%
- 在 $\pm 10\% \Delta U_{IN}$ 时的稳定度	- Stability at $\pm 10\% \Delta U_{IN}$	<0.05%
输出功率	Output power	
- 精确度	- Accuracy	<1%
过压类别	Overvoltage category	2
保护功能	Protection	OT, OVP, OPP, PF, OCP ⁽²⁾
隔离耐压	Isolation	
- 输入对外壳	- Input to enclosure	2500V DC
- 输入对输出	- Input to output	2500V DC
- 输出对外壳	- Output to enclosure	DC-对PE最大耐压为400V / Max.400V on DC- against PE
污染等级	Pollution degree	2
保护级别	Protection class	1
模拟编程	Analog interface	内置15-针D-Sub母插 / Built in, 15-pole D-Sub, female
-输入范围	- Input range	0...5V 或 0...10V (可转换) / 0...5V or 0...10V (switchable)
- U / I 的精确度	- Accuracy U / I	0...10V: <0.2% 0...5V: <0.4%
- 可编程分辨率	- Programming resolution	见下表 / See tables below
串联操作	Series operation	可实现, 任意直流负极端对PE最大有300V DC的电压转移 / yes, with true master-slave with max. potential shift of 400V against PE on any DC minus pole
并联操作	Parallel operation	可实现, 通过真实主从操作, 可连接多达10台产品 (经共享总线) / yes, with true master-slave, up to 10 units (via Share bus)
安全标准	Standards	EN 60950, EN 61326
认证证书	Certifications	EN 61326, IEC 1010, EN 61010 EMC通过TÜV认证, 且符合 / EMC TÜV approved according to IEC 61000-6-2:2005 IEC 61000-6-3:2006 等级 B
制冷	Cooling	风扇, 也可选: 水冷 / Fan, optional: water
工作温度	Operation temperature	0...50°C
储存温度	Storage temperature	-20...70°C
相对湿度	Relative humidity	<80%, n.c.
使用高度	Operation altitude	<2000m
产品尺寸 (宽x高x长) ⁽¹⁾	Dimensions (W H D) ⁽¹⁾	19" 3HE/U 609mm

(1 仅为外壳尺寸, 非产品整体尺寸 / Enclosure only, not overall
(2见第133页/ See page 133

EA-PSI 9000 3U 3.3KW - 150KW

重载型实验室直流电源 / HEAVY DUTY LABORATORY DC POWER SUPPLIES



技术参数	Technical Data	PSI 9040-170 3U	PSI 9080-170 3U	PSI 9200-70 3U	PSI 9360-40 3U
DC输出电压	Output voltage DC	0...40V	0...80V	0...200V	0...360V
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<100mV _{PP} <10mV _{RMS}	<100mV _{PP} <10mV _{RMS}	<200mV _{PP} <25mV _{RMS}	<250mV _{PP} <50mV _{RMS}
- 感测端电压补偿	-Sense compensation	~ 1V	~ 2V	~ 5V	~ 7.5V
输出电流	Output current	0...170A	0...170A	0...70A	0...40A
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<528mA _{PP} <106mA _{RMS}	<300mA _{PP} <40mA _{RMS}	<44mA _{PP} <11mA _{RMS}	<32mA _{PP} <6.5mA _{RMS}
输出功率	Output power	0...3300W	0...5000W	0...5000W	0...5000W
效率	Efficiency	~93%	~93%	~95%	~93%
U的编程步宽（典型值）	Programming U (typ.)	1mV	1.5mV	4mV	7mV
I的编程步宽（典型值）	Programming I (typ.)	3.5mA	3.5mA	1.5mA	1mA
P的编程步宽（典型值）	Programming P (typ.)	0.27W	0.27W	0.27W	0.27W
重量 ⁽²⁾	Weight ⁽²⁾	19.8kg	19.8kg	19.8kg	19.8kg
产品编号	Article number	06230350	06230351	06230352	06230353

技术参数	Technical Data	PSI 9500-30 3U	PSI 9750-20 3U	PSI 9040-340 3U	PSI 9040-510 3U
DC输出电压	Output voltage DC	0...500V	0...750V	0...40V	0...40V
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<250mV _{PP} <70mV _{RMS}	<600mV _{PP} <120mV _{RMS}	<150mV _{PP} <10mV _{RMS}	<150mV _{PP} <10mV _{RMS}
- 感测端电压补偿	-Sense compensation	~ 10V	~ 15V	~ 1V	~ 1V
输出电流	Output current	0...30A	0...20A	0...340A	0...510A
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<14mA _{PP} <8mA _{RMS}	<14mA _{PP} <8mA _{RMS}	<600mA _{PP} <80mA _{RMS}	<900mA _{PP} <120mA _{RMS}
输出功率	Output power	0...5000W	0...5000W	0...6600W	0...10000W
效率	Efficiency	~95.5%	~94%	~93%	~93%
U的编程步宽（典型值）	Programming U (typ.)	10mV	15mV	1mV	1mV
I的编程步宽（典型值）	Programming I (typ.)	0.8mA	0.5mA	6.5mA	10mA
P的编程步宽（典型值）	Programming P (typ.)	0.29W	0.29W	0.27W	0.55W
重量 ⁽²⁾	Weight ⁽²⁾	19.8kg	19.8kg	25.5kg	25.5kg
产品编号	Article number	06230354	06230355	06230356	06230363

技术参数	Technical Data	PSI 9080-340 3U	PSI 9200-140 3U	PSI 9360-80 3U	PSI 9500-60 3U
DC输出电压	Output voltage DC	0...80V	0...200V	0...360V	0...500V
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<150mV _{PP} <10mV _{RMS}	<200mV _{PP} <25mV _{RMS}	<300mV _{PP} <50mV _{RMS}	<300mV _{PP} <70mV _{RMS}
- 感测端电压补偿	-Sense compensation	~ 2V	~ 5V	~ 7.5V	~ 10V
输出电流	Output current	0...340A	0...140A	0...80A	0...60A
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<600mA _{PP} <80mA _{RMS}	<89mA _{PP} <22mA _{RMS}	<77mA _{PP} <13mA _{RMS}	<33mA _{PP} <16mA _{RMS}
输出功率	Output power	0...10000W	0...10000W	0...10000W	0...10000W
效率	Efficiency	~93%	~95%	~93%	~95%
U的编程步宽（典型值）	Programming U (typ.)	1.5mV	4mV	7mV	10mV
I的编程步宽（典型值）	Programming I (typ.)	7mA	3mA	2mA	1.5mA
P的编程步宽（典型值）	Programming P (typ.)	0.55W	0.55W	0.55W	0.55W
重量 ⁽²⁾	Weight ⁽²⁾	25.5kg	25.5kg	25.5kg	25.5kg
产品编号	Article number	06230357	06230358	06230359	06230360

(1 RMS值: NF 0...300KHz, PP值: HF 0...20MHz / RMS value: LF 0...300kHz, PP value: HF 0...20MHz

(2 针对标准型号, 带可选件的重量会不同 / of standard version, models with options may vary



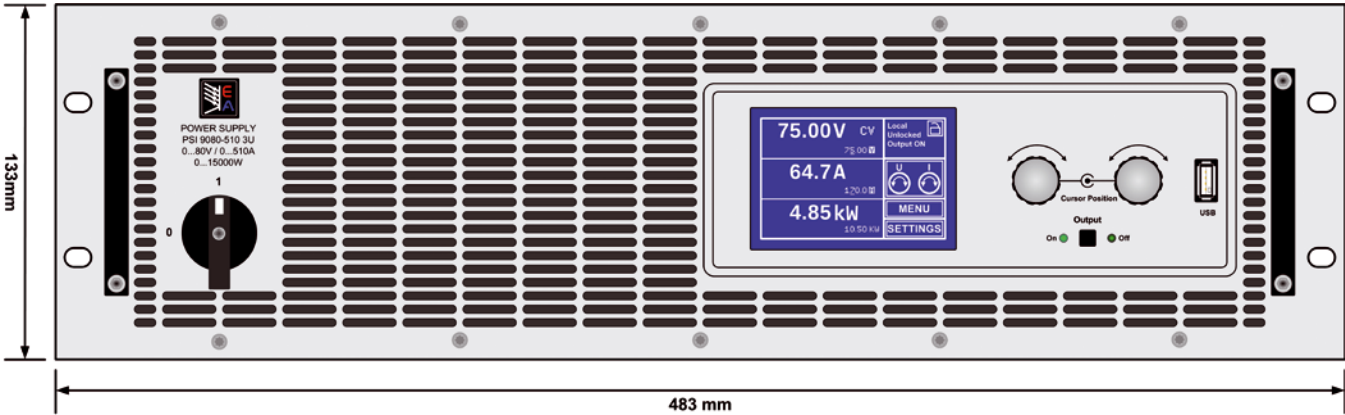
EA-PSI 9000 3U 3.3KW - 150KW

重载型实验室直流电源 / HEAVY DUTY LABORATORY DC POWER SUPPLIES

技术参数	Technical Data	PSI 9750-40 3U	PSI 91000-30 3U	PSI 9080-510 3U	PSI 9200-210 3U
DC输出电压	Output voltage DC	0...750V	0...1000V	0...80V	0...200V
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<650mV _{PP} <120mV _{RMS}	<800mV _{PP} <200mV _{RMS}	<150mV _{PP} <10mV _{RMS}	<250mV _{PP} <25mV _{RMS}
- 感测端电压补偿	-Sense compensation	~ 15V	~ 20V	~ 2.5V	~ 6V
输出电流	Output current	0...40A	0...30A	0...510A	0...210A
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<38mA _{PP} <7mA _{RMS}	<22mA _{PP} <11mA _{RMS}	<900mA _{PP} <120mA _{RMS}	<167mA _{PP} <33mA _{RMS}
输出功率	Output power	0...10000W	0...10000W	0...15000W	0...15000W
效率	Efficiency	~94%	~95%	~93%	~95%
U的编程步宽（典型值）	Programming U (typ.)	15mV	20mV	1.5mV	4mV
I的编程步宽（典型值）	Programming I (typ.)	1mA	1mA	10mA	4mA
P的编程步宽（典型值）	Programming P (typ.)	0.55W	0.6W	0.85W	0.85W
重量 ⁽²⁾	Weight ⁽²⁾	25.5kg	25.5kg	33kg	33kg
产品编号	Article number	06230361	06230362	06230364	06230365

技术参数	Technical Data	PSI 9360-120 3U	PSI 9500-90 3U	PSI 9750-60 3U	PSI 91500-30 3U
DC输出电压	Output voltage DC	0...360V	0...500V	0...750V	0...1500V
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<350mV _{PP} <50mV _{RMS}	<300mV _{PP} <70mV _{RMS}	<700mV _{PP} <120mV _{RMS}	<1000mV _{PP} <350mV _{RMS}
- 感测端电压补偿	-Sense compensation	~ 7.5V	~ 10V	~ 15V	~ 30V
输出电流	Output current	0...120A	0...90A	0...60A	0...30A
- 纹波 ⁽¹⁾	- Ripple ⁽¹⁾	<132mA _{PP} <19mA _{RMS}	<50mA _{PP} <23mA _{RMS}	<61mA _{PP} <11mA _{RMS}	<19mA _{PP} <13mA _{RMS}
输出功率	Output power	0...15000W	0...15000W	0...15000W	0...15000W
效率	Efficiency	~93%	~95%	~94%	~95%
U的编程步宽（典型值）	Programming U (typ.)	7mV	10mV	15mV	29mV
I的编程步宽（典型值）	Programming I (typ.)	2.5mA	2mA	1.5mA	1mA
P的编程步宽（典型值）	Programming P (typ.)	0.85W	0.9W	0.9W	0.9W
重量 ⁽²⁾	Weight ⁽²⁾	33kg	33kg	33kg	33kg
产品编号	Article number	06230366	06230367	06230368	06230369

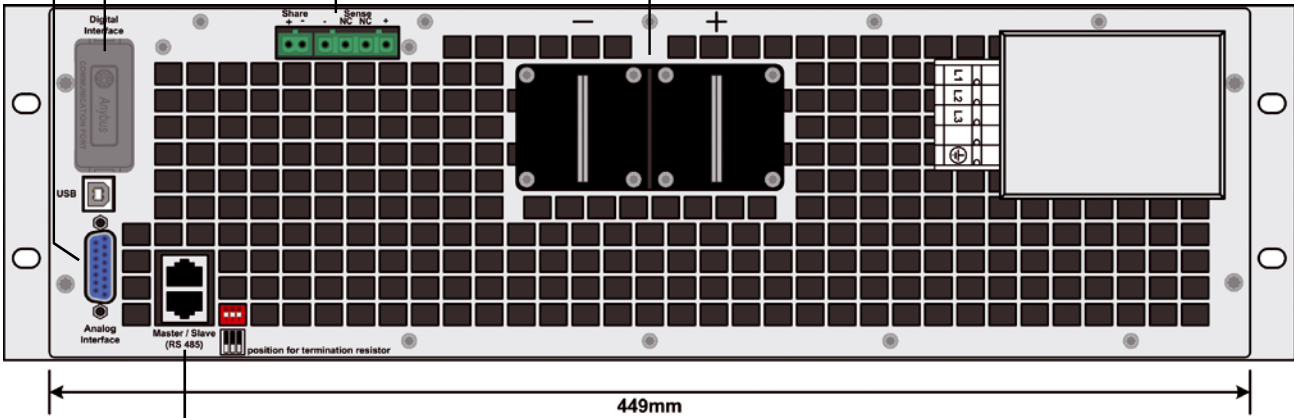
(1) RMS值: NF 0...300kHz, PP值: HF 0...20MHz / RMS value: LF 0...300kHz, PP value: HF 0...20MHz
(2) 针对标准型号，带可选件的重量会不同 / of standard version, models with options may vary



USB与模拟接口
USB and analog interface
数字接口卡插槽
Slot for digital interfaces

共享总线端&感测端
Terminals for Share bus & sense

直流输出端
DC output



主-从总线连接端子
Connectors for master-slave

