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可编程高效实验室直流电源

Programmable high efficiency DC Power supplies



EA-PSI 9000 3U系列是一款由微处理器控制的高效 实验室电源,其标准版配备多种功能和特征。用户 友好交互式菜单导航功能,让用户使用起来极其方 便且有效率。

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.

可对用户和进程文档进行编辑、存储,以及再次上载,从而改善测试或其它应用的可重复性。 为了实现更大输出功率,可配置高达150 kW和42U的机柜,以满足用户需求。

交流输入

本系列所有型号采用主动式功率因数,专门设计成使用340 V至460 V AC的三相交流电。

功率级自动调整

所有型号的输出功率都灵活可调。可在 较低电流时输出较高电压,或在低电压 时输出较高电流,但总是维持在最大额 定功率范围内。它们的设定功率都可 调,因此仅用一台产品就能覆盖广泛的 应用。



直流输出

本系列有0...40 V和0...1500 V输出电压, 0...20 A和 0...510 A输出电流, 0...3.3 kW, 0...5 kW, 0...10 kW或0...15 kW输出功率的不同型号。输出端位于产品后面板上。

放电电路

额定输出电压为200 V或以上的产品,其输出电容都 配有一放电电路。在空载或带小负载时,它能确保 危险电压在直流输出关闭后降至60 V DC以下。该电 压值被认为是对人体安全的最高电压。

保护功能

为保护连接设备,可给产品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。

一旦因故超过这三个值中的一个,直流输出会被立 即切断,并在显示器与接口端发出一状态信号。 本产品还有过温保护,如果产品过热,它会关断直 流输出。

远程感测

远程感测输入端可直接连到负载设备,以补偿连线 上的部分压降。如果感测输入端已接到负载上,本 电源会自动调整输出电压,以确保负载获得准确所 需的电压值。

内置模拟接口

产品后板上装有一隔离模拟接口端子。 它具有一模拟输入脚,接上0 V...10 V 或0 V...5 V电压,可设置0...100%的输 出电压、电流与功率。要监控输出电压 与电流,可给模拟输出脚接上0 V...10 V 或0 V...5 V电压来完成。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。



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 150 kW and up to 42U size can be configured to suit the user's requirements.

AC input

All models are provided with an active Power Factor Correction circuit and are designed for a usage on a three-phase supply with 340 V up to 460 V AC.

Auto-ranging power stage

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 unit.

DC output

DC output voltages between 0...40 V and 0...1500 V, output currents between 0...20 A and 0...510 A and output power ratings of 0...3.3 kW, 0...5 kW, 0...6.6 kW, 0...10 kW or 0...15 kW are available. The output terminal is located on the rear panel.

Discharge circuit

Models with a nominal output voltage of 200 V or higher include a discharge circuit for the output capacities. For no load or low load situations, it ensures that the dangerous output voltage can sink to under 60 V DC after the DC output has been switched off. This value is considered as limit for voltages dangerous to human safety.

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).

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

Remote sensing

The standard sensing 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 sensing 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.

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, power and resistance from 0...100% through control voltages of 0 V...10 V or 0 V...5 V. To monitor the output voltage and current, there are analog outputs with 0 V...10 V or 0 V...5 V. Also, several inputs and outputs are available for controlling and monitoring the device status.



Α



Α

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显示器与控制面板
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Display and control panel



设定与实际输出电压、电流与功率都清晰显示于图 形显示器上。彩色的TFT屏幕为点触式,用一个手指 就能控制所有功能。

通过旋钮或者数字键盘直接输入参数,也可调节设 定电压、电流、功率或阻值(内阻模拟)。

若想防止意外操作,可锁定所有操作键。

多语言控制面板



英文 / English

中文/Chinese

device with just a finger. 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.

Set values and actual values of output voltage, output current and output

power are clearly represented on the graphic display. The colour TFT screen

is touch sensitive and can be intuitively used to control all functions of the

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

Multi-language control panel



俄文 / Russian

德文/German

函数发生器

本系列所有型号都具有一可形成如下典型函数的真 实函数发生器,并能将它们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,或经某 一数字接口远程配置。

预设函数会为用户提供所有必须的参数,如Y偏差 值,时间/频率或幅度,整套配置完成。

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.



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,并能分成多达99组序列。这些可用于研发和生产的测试。通过前板的USB端口可将这些序列上载使用或存储于标准U盘上,这样可方便更换不同的测试序列。

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 99 sequences. Those can be used for testing purposes 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.

此外还有一个XY发生器,能产生如UI或IU这类的函 数,用户一般以表格(CSV文档)形式创建,然后 从U盘上上传。 针对光伏相关的测试,还可形成PV曲线,作为用户 可调关键参数。 通过后续的固件升级,可安装更多的曲线特性,供 用户选择。

主−从操作

所有产品默认有一个数字式主-从总线。通过它可并 联最多36台同型号产品,将实际电压、电流与功率 汇总,形成更大的系统。经产品上的控制面板,或 经任意数字通讯接口的远程控制,可完成主-从系统 的全部配置。主机的操作可手动控制,也可远程控 制(任意接口)。

控制软件

本产品还配有适合Windows系统下操 作的控制软件,可以远程控制多台同 型号产品, 甚至不同型号产品。它有一 个清晰的主界面,显示所有设定值与实 际值,SCPI与ModBus RTU指令的直 接输入模式,固件升级特性,以及被称 为"排序"的半自动化控制表格。

诜项

- 适合RS232、CAN、CANopen、ModBus TCP、Profibus、Profinet、EtherCAT或Ethernet的 绝缘数字接口模块。接口插槽位于产品后板(仅针对 标准型号),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。也可参考第134页。
- 还可安装带固定GPIB端口的三位接口(3 W),代替 接口模块用的默认插槽。
- 高速跃变(按需可供,也可见第144页) *
- 水冷(按需可供,详见页面145)

USB与模拟接口(电隔离)

*并非针对所有电压 - 请咨询我们获取更多信息

产品视图



There is furthermore a XY generator, which is used to generate other functions, such as 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.

Master-slave

All models feature a digital master-slave bus by default. It can be used to connect up to 36 units of identical models in parallel operation to a bigger system with totals formation of the actual value of voltage, current and power. The configuration of the master-slave system is either completely done on the control panels of the units or by remote control via any of digital communication interfaces. Handling of the master unit is possibly by manual or remote control (any interface).



Control software

Included with the device is a control software for Windows PC, which allows for the remote control of multiple identical or even different types of devices. It has a clear interface for all set and actual values, a direct input mode for SCPI and ModBus RTU commands, a firmware update feature and the semi-automatic table control named "Sequencing".

Options

- Digital interface modules for RS232, CAN, CANopen, ModBus TCP, Profibus, Profinet, EtherCAT or Ethernet. The interface slot is located on the rear panel (standard models only), 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 134.
- Three-way interface (3W) with a rigid GPIB port installed instead of the default slot for retrofittable interface modules
- High Speed ramping (upon request, also see page 144) *
- Water Cooling (upon request, also see page 145)

* Not available for all voltages - please quote for availability

Product views



标准版后视图

Rear view of base model







技术参数	Technical Data	Series PSI 9000 3U / 系列
交流:供电	AC: Supply	
- 电压标准	- Voltage standard	欧版型号 / European models: 340460 V, 2ph/3ph 美版型号 / US models: 188229 V, 2ph/3ph
- 频率	- Frequency	4566 Hz
- 功率因数	- Power factor	>0.99
直流: 电压	DC: Voltage	
- 精确度	- Accuracy	<额定值的0.1%/<0.1% of rated value
- 0-100%的负载调整率	- Load regulation 0-100%	<额定值的0.05% / <0.05% of rated value
- ±10% ∆U _{AC} 的线性调整率	- Line regulation $\pm 10\%\Delta U_{\text{AC}}$	<额定值的0.02% / <0.02% of rated value
- 带载10-100%调整需时	- Regulation 10-100% load	<2 ms
- 带载10-90%的斜率	- Slew rate 10-90%	最大 / Max. 30 ms
- 过压保护	- Overvoltage protection	可调,0110% U _{Nenn} / Adjustable, 0110% U _{Nom}
- 直流关闭时空载放电时间	- No load discharge time on DC off	100% U 降至 / to <60 V: 少于10 s / less than 10 s
直流: 电流	DC: Current	
- 精确度	- Accuracy	<额定值的0.2%/<0.2% of rated value
- 1-100% ΔU _{DC} 的负载调整率	- Load regulation 1-100% ΔU _{DC}	<额定值的0.15%/<0.15% of rated value
- ±10% ∆U _{AC} 的线性调整率	- Line regulation $\pm 10\% \Delta U_{AC}$	<额定值的0.05% / <0.05% of rated value
直流: 功率	DC: Power	
- 精确度	- Accuracy	<额定值的1%/<1% of rated value
过压类别	Overvoltage category	2
保护功能	Protection	OT, OVP, OPP, OCP, PF ⁽²
隔离耐压 1	Insulation 1	
- 交流输入对外壳	- AC input to enclosure	2500 V DC
- 交流输入对直流输出	- AC iput to DC output	2500 V DC
- 直流输出对外壳 (PE)	- DC output to enclosure (PE)	依型号而定,具体见后面表格 / Depending on model, see tables
污染等级	Degree of pollution	2
保护等级	Protection class	1
显示器与面板	Display and panel	带触摸面板的图形显示器 / Graphics display with touch panel
数字接口	Digital interfaces	
- 内置	- Built-in	1x 通讯用B类USB端口 / 1x USB type B for communication 1x GPIB (3W选项功能时可选) / 1x GPIB (optional with option 3W)
- 插槽	- Slot	1x 可拆卸内置模块(仅针对标准版) / 1x for retrofittable plug-in modules (standard models only)
模拟接口	Analog interface	内置15-针D-Sub母插,电隔离/
	-	Built-in, 15-pole D-Sub (female), galvanically isolated
- 输入范围	- Signal range	05V或010V(可切换)/05Vor010V(switchable)
- 输入脚	- Inputs	U, I, P, R, 远程开-关, 直流输出开-关, 内阻模式开-关/ U, I, P, R, Remote on-off, DC output on-off, resistance mode on-off
- 输出脚	- Outputs	U/I, 过压,报警,参考电压 / U/I, Overvoltage, alarms, reference voltage
-U/I/P/R精确度	- Accuracy U / I / P / R	010 V: <0.2% 05 V: <0.4%
并联操作	Parallel operation	可实现,通过真实主-从操作,可接多达36台产品/ Yes, with master-slave, up to 36 units
安规标准	Standards	EN 61010-1:2010 EMC获得 TÜV认证,符合/EMCTÜV approved according to IEC 61000-6-2:2005 IEC 61000-6-3:2006 Class B/等级B
制冷方式	Cooling	温控风扇(可选水冷) / Temperature controlled fans (optional: water)
工作温度	Operation temperature	050 °C
储存温度	Storage temperature	-2070 °C
相对湿度	Relative humidity	<80%, 无凝露 / non-condensing
工作高度	Operation altitude	<2000 m
尺寸 (宽 高 深) (1	Dimensions (W H D) ⁽¹	19"x 3 HE / 3U x 609 mm

(1 外壳尺寸非整体尺寸 / Enclosure only, not overall (2 见第146页 / See page 146

技术参数	Technical Data	PSI 9040-170 3U	PSI 9080-170 3U	PSI 9200-70 3U	PSI 9360-40 3U
额定电压&范围	Rated voltage & range	040 V	080 V	0200 V	0360 V
- 纹波 (1	- Ripple (1	<200 mV _{PP} <16 mV _{RMS}	$<\!\!200mV_{PP}\\<\!\!16mV_{RMS}$	$<300 \text{ mV}_{PP}$ $<40 \text{ mV}_{RMS}$	<320 mV _{PP} <65 mV _{RMS}
- 感测补偿电压	- Sensing compensation	~1V	~2 V	~5 V	~7.5 V
隔离耐压	Insulation				
- 直流负极 <-> PE	- Negative DC pole <-> PE	±400 V DC	$\pm400VDC$	$\pm400VDC$	±400 V DC
- 直流正极 <-> PE	- Positive DC pole <-> PE	±400 V DC	$\pm400VDC$	$\pm 600 \text{V} \text{DC}$	±600 V DC
额定电流&范围	Rated current & range	0170 A	0170 A	070 A	040 A
- 纹波 (1	- Ripple (1	$< 80 \text{ mA}_{\text{RMS}}$	<80 mA _{RMS}	<22 mA _{RMS}	<18 mA _{RMS}
额定功率&范围	Rated power & range	03300 W	05000 W	05000 W	05000 W
效率	Efficiency	~93%	~93%	~95%	~93%
U的编程分辨率	Programming resolution U	<u>≤</u> 2 mV	<u>≤</u> 4 mV	<u>≤</u> 9 mV	\leq 15 mV
I的编程分辨率	Programming resolution I	<u>≤</u> 7 mA	<u>≤</u> 7 mA	<u>≤</u> 3 mA	$\leq 2 \text{ mA}$
重量 (2	Weight ⁽²	~17 kg	~17 kg	~17 kg	~17 kg
订购编号-欧版(3	Ordering number Euro ⁽³	06230350	06230351	06230352	06230353
订购编号-美版 (3	Ordering number US ⁽³	06238350	06238351	06238352	06238353

技术参数	Technical Data	PSI 9500-30 3U	PSI 9750-20 3U	PSI 9040-340 3U	PSI 9040-510 3U
额定电压&范围	Rated voltage & range	0500 V	0750 V	040 V	040 V
- 纹波 ⁽¹	- Ripple ⁽¹	<350 mV _{PP} <70 mV _{RMS}	<800 mV _{PP} <200 mV _{RMS}	$<\!\!320\text{mV}_{PP}\\<\!\!25\text{mV}_{RMS}$	$<\!\!320\text{mV}_{PP}\\<\!\!25\text{mV}_{RMS}$
- 感测补偿电压	- Sensing compensation	~10 V	~15 V	~1V	~1V
隔离耐压	Insulation				
- 直流负极 <-> PE	- Negative DC pole <-> PE	±725 V DC	±725 V DC	$\pm400VDC$	±400 V DC
- 直流正极 <-> PE	- Positive DC pole <-> PE	±1000 V DC	±1000 V DC	±400 V DC	±400 V DC
额定电流&范围	Rated current & range	030 A	020 A	0340 A	0510 A
- 纹波 (1	- Ripple (1	$<16 \text{mA}_{\text{RMS}}$	$<16 \text{mA}_{\text{RMS}}$	$<160 \text{ mA}_{\text{RMS}}$	$< 120 \text{ mA}_{\text{RMS}}$
额定功率&范围	Rated power & range	05000 W	05000 W	06600 W	010000 W
效率	Efficiency	~95.5%	~94%	~93%	~93%
U的编程分辨率	Programming resolution U	<u>≤</u> 21 mV	<u>≤</u> 31 mV	<u><</u> 2 mV	<u><</u> 2 mV
I的编程分辨率	Programming resolution I	$\leq 2 \text{ mA}$	$\leq 1 \text{mA}$	\leq 14 mA	<u>≤</u> 21 mA
重量 (2	Weight ⁽²	~17 kg	~17 kg	~24 kg	~30 kg
订购编号-欧版 (3	Ordering number Euro ⁽³	06230354	06230355	06230356	06230363
订购编号-美版 (3	Ordering number US ⁽³	06238354	06238355	06238356	06238363

技术参数	Technical Data	PSI 9080-340 3U	PSI 9200-140 3U	PSI 9360-80 3U	PSI 9500-60 3U
额定电压&范围	Rated voltage & range	080 V	0200 V	0360 V	0500 V
- 纹波 "	- Ripple ⁽¹	$<320 \text{ mV}_{PP} \\ <25 \text{ mV}_{RMS}$	<300 mV _{PP} <40 mV _{RMS}	<320 mV _{PP} <65 mV _{RMS}	<350 mV _{PP} <70 mV _{RMS}
- 感测补偿电压	- Sensing compensation	~2V	~5 V	~7.5 V	~10 V
隔离耐压	Insulation				
- 直流负极 <-> PE	- Negative DC pole <-> PE	$\pm400\mathrm{V}\mathrm{DC}$	±400 V DC	±400 V DC	±725 V DC
- 直流正极 <-> PE	- Positive DC pole <-> PE	$\pm400\mathrm{V}\mathrm{DC}$	±600 V DC	±600 V DC	±1000 V DC
额定电流&范围	Rated current & range	0340 A	0140 A	080 A	060 A
- 纹波 (1	- Ripple (1	$<160 \text{ mA}_{\text{RMS}}$	<44 mA _{RMS}	<35 mA _{RMS}	<32 mA _{RMS}
额定功率&范围	Rated power & range	010000 W	010000 W	010000 W	010000 W
效率	Efficiency	~93%	~95%	~93%	~95%
U的编程分辨率	Programming resolution U	\leq 4 mV	<u>≤</u> 9 mV	<u>≤</u> 15 mV	<u>≤</u> 21 mV
I的编程分辨率	Programming resolution I	<u>≤</u> 14 mA	<u><</u> 6 mA	<u>≤</u> 4 mA	<u>≤</u> 3 mA
重量 (2	Weight ⁽²	~24 kg	~24 kg	~24 kg	~24 kg
订购编号-欧版(3	Ordering number Euro ⁽³	06230357	06230358	06230359	06230360
订购编号-美版 (3	Ordering number US ⁽³	06238357	06238358	06238359	06238360

(1 RMS值: 在BWL 300 kHz时测量的LF值, PP值: 在BWL 20MHz时测量的HF值/RMS value: measures at LF with BWL 300 kHz, PP value: measured at HF with BWL 20MHz (2 为标准版的重量,带选项功能的则不同/Weight of the base version, models with option(s) may vary (3 为标准版的订购编号,带选项功能的则不同/Ordering number of the base version, models with option(s) installed have different ordering numbers





技术参数	Technical Data	PSI 9750-40 3U	PSI 91000-30 3U	PSI 9080-510 3U	PSI 9200-210 3U
额定电压&范围	Rated voltage & range	0750 V	01000 V	080 V	0200 V
- 纹波 ⁽¹	- Ripple (1	<800 mV _{PP} <200 mV _{RMS}	$< 1600 \text{ mV}_{PP}$ $< 350 \text{ mV}_{RMS}$	< 320 mV _{PP} < 25 mV _{RMS}	< 300 mV _{PP} $<$ 40 mV _{RMS}
- 感测补偿电压	- Sensing compensation	~15 V	~20 V	~2.5 V	~6V
隔离耐压	Insulation				
- 直流负极 <-> PE	- Negative DC pole <-> PE	±725 V DC	±725 V DC	±400 V DC	$\pm400\mathrm{V}\mathrm{DC}$
- 直流正极 <-> PE	- Positive DC pole <-> PE	±1000 V DC	±1000 V DC	±400 V DC	±600 V DC
额定电流&范围	Rated current & range	040 A	030 A	0510 A	0210 A
- 纹波 (1	- Ripple (1	$<32 \text{mA}_{\text{RMS}}$	<22 mA _{RMS}	$<240 \text{ mA}_{\text{RMS}}$	<66 mA _{RMS}
额定功率&范围	Rated power & range	010000 W	010000 W	015000 W	015000 W
效率	Efficiency	~94%	~95%	~93%	~95%
U的编程分辨率	Programming resolution U	<u><</u> 31 mV	<u>≤</u> 41 mV	<u><</u> 4 mV	<u><</u> 9 mV
I的编程分辨率	Programming resolution I	<u><</u> 2 mA	<u><</u> 2 mA	<u><</u> 21 mA	<u><</u> 9 mA
重量 (2	Weight ⁽²	~24 kg	~24 kg	~30 kg	~30 kg
订购编号-欧版(3	Ordering number Euro ⁽³	06230361	06230362	06230364	06230365
订购编号-美版 (3	Ordering number US ⁽³	06238361	06238362	06238364	06238365

技术参数	Technical Data	PSI 9360-120 3U	PSI 9500-90 3U	PSI 9750-60 3U	PSI 91500-30 3U
额定电压&范围	Rated voltage & range	0360 V	0500 V	0750 V	01500 V
- 纹波 "	- Ripple ⁽¹	< 320 mV _{PP} < 65 mV _{RMS}	$<350 \text{ mV}_{PP}$ $<70 \text{ mV}_{RMS}$	<800 mV _{PP} <200 mV _{RMS}	$<2400 \text{ mV}_{PP}$ $<400 \text{ mV}_{RMS}$
- 感测补偿电压	- Sensing compensation	~7.5 V	~10 V	~15 V	~30 V
隔离耐压	Insulation				
- 直流负极 <-> PE	- Negative DC pole <-> PE	±400 V DC	±725 V DC	±725 V DC	±725 V DC
- 直流正极 <-> PE	- Positive DC pole <-> PE	±600 V DC	$\pm 1000 \text{V} \text{DC}$	±1000 V DC	±1500 V DC
额定电流&范围	Rated current & range	0120 A	090 A	060 A	030 A
- 纹波 ⁽¹	- Ripple (1	<50 mA _{RMS}	<48 mA _{RMS}	<48 mA _{RMS}	<26 mA _{RMS}
额定功率&范围	Rated power & range	015000 W	015000 W	015000 W	015000 W
效率	Efficiency	~93%	~95%	~94%	~95%
U的编程分辨率	Programming resolution U	\leq 15 mV	<u>≤</u> 21 mV	<u><</u> 31 mV	<u><</u> 61 mV
l的编程分辨率	Programming resolution I	<u><</u> 5 mA	<u><</u> 4 mA	<u><</u> 3 mA	<u><</u> 2 mA
重量 (2	Weight ⁽²	~30 kg	~30 kg	~30 kg	~30 kg
订购编号-欧版(3	Ordering number Euro ⁽³	06230366	06230367	06230368	06230369
订购编号-美版(3	Ordering number US ⁽³	06238366	06238367	06238368	06238369

(1 RMS值: 在BWL 300 kHz时测量的LF值, PP值: 在BWL 20MHz时测量的HF值/RMS value: measures at LF with BWL 300 kHz, PP value: measured at HF with BWL 20MHz (2)为标准版的重量, 带选项功能的则不同/Weight of the base version, models with option(s) may vary (3)为标准版的订购编号,带选项功能的则不同//Ordering number of the base version, models with option(s) installed have different ordering numbers

产品视图

Product views

