SanRex LEADING THE NEW POWER ELECTRONICS ▶▶

金属表面处理用电源

Power Supply for Metal Surface Treatment

株式会社 三社電機製作所
SANSHA ELECTRIC MFG. CO., LTD.

超过半个世纪的技术积累

三社电机不断开发新型金属表面处理用电源以对应现代电子行业的迅速发展和多样化的需求。

SanRex

Power Supply for Met

表面处理技术的多样化

现代的表面处理技术在装饰性电镀，功能性电镀，防锈处理及电子元件电镀领域的应用越来越广泛。
在这一领域中要求表面处理技术必须具有更高的精度，品质及经济性。
尤其是电镀以先进的加工技术在表面处理技术中占有着非常重要的角色。

Diversified surface treatment technology

As for the surface treatment technology, the usage and function are extending to the function platings of a decoration, rust prevention, and electronic parts more and more now. As for this surface treatment technology, high accuracy or more, the high quality, and the economy are strongly demanded by such an average. Especially, galvanization bears an important role by the function with excellent the processing technology.

金属表面处理的过程

金属表面处理=电镀作业是一个复杂的工程。包括可称为质地调整的〈前处理〉〈各种电镀〉〈后处理〉，还要考虑材料和加工方法。
然而，现在即使是对高难度，复杂的电镀同样提出了高品质，节能，省力，合理化处理的要求。
新型电源的引进是解决这一难题的方法之一。
新系统可以迅速有效地将电流调到各种电镀需要的最佳电流值，提高电镀品质的同时，快速适应节能时代的到来。
这些新型的电源低噪音，无公害，无污染。

Process of metal-surface treatment

Metal surface treatment or plating involves a complicated process of pre-treatment, various plating processes, and post-treatment that are considered as the treatment of base materials, in addition to other processes depending on each material and finishing method.
Today, however, stricter quality, improvement in energy efficiency, and process rationalization are required in plating, no matter how complicated and advanced the process is.
Our new power supply units are one way of comprehensively resolving such issues.
The new systems are capable of quickly and efficiently adjusting optimal electric current required for various kinds of plating, thus improving plating quality as well as responding to the needs of the energy saving era.
These new systems greatly reduce noise and pollution as well.

表面处理电源的革新

表面处理业界技术的急速进步，对于电源技术也要求同步革新。
一方面是功率电力技术（电力半导体模块，变流技术，控制技术）每天都在快速发展。特别是电力半导体的高频化，使传统的电镀电源概念得到革新，实现了逆变方式的电源和脉冲电源投入实际使用。
在未来三社电机更加以高精度，效率为目标努力。
通过电源小型化，轻量化，与自动电镀线控制软件对接集中控制，提高品质，节约空间，节省劳动力。

Reformation of surface treatment power supply

As the technologies of the surface treatment industry quickly advance, a technology revolution is required in power supply systems. Power electronics technologies (semiconductor elements for power supply, conversion technology, and control technology) that support the technology revolution have been advancing every day. In particular, the development of higher frequency wavelength technology for power supplies completely changed the concept of conventional power supply for plating. This resulted in commercialization of the inverter power supply and pulse power supply systems.
In the future, SanRex will strive for better precision and higher efficiency, along with development of smaller and lighter devices, as well as improved energy efficiency and quality through centralized management of automated plating lines based on micro controller technology.

金属表面处理用电源

Technology based on more than half a century of development

SanRex is developing power supply units for metal surface treatment that keep up with the rapidly diversifying needs of the electronics industry.

tal Surface Treatment

Force of Pulse Technology

脉冲效果的追求……提高生产/加快镀层的形成，提高镀层质量

适用于新处理工艺的波形控制的具体化。
挑战未来各个领域的无限需求。

Reliability improvement & speed up and formation film of productivity. A wavy control that suits a new process is materialized. The challenge of the road to the process with an infinite possibility is supported.

Inverter Technology

逆变方式的采用

所有的逆变电源采用了最新的数码控制技术和高性能电力半导体

A lineup for the inverter power supply with the latest digital control & an efficient electric power semiconductor.

Result of Know-how Accumulated over Many Years

多年技术经验的结晶

通过多年对金属表面处理现场的了解，针对现场环境进行设计，以保证整流器长期稳定地运行。

Design based on in depth knowledge of the locus of metal surface processing ensures stable performance over the long term.

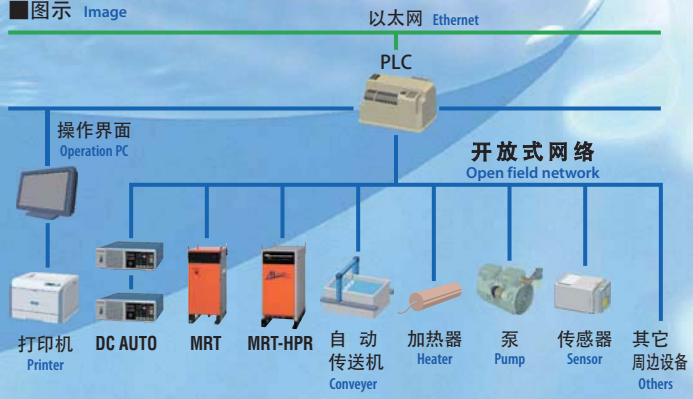
Open Network Interface

适用于开放式网络

我们的电源装配了符合国际标准通讯界面的接口，缩短了垂直启动等时间。
因此可以在短时间内实现高信赖度的系统构筑。

We mounted the interface in accordance with an international standard. Therefore the system construction of high reliability will be achieved in a short time.

■图示 Image



DeviceNet™ CC-Link

在业界中，SanRex的产品，先驱搭载了DeviceNet等开放网络通信。通过这个功能可实现电脑，PLC等控制机器的相互连接，与机械的配备也很容易。将不需要通过远程控制器或RS232C等的专用通信而开发复杂程序及专用线路板。（不能适应一部分机种）

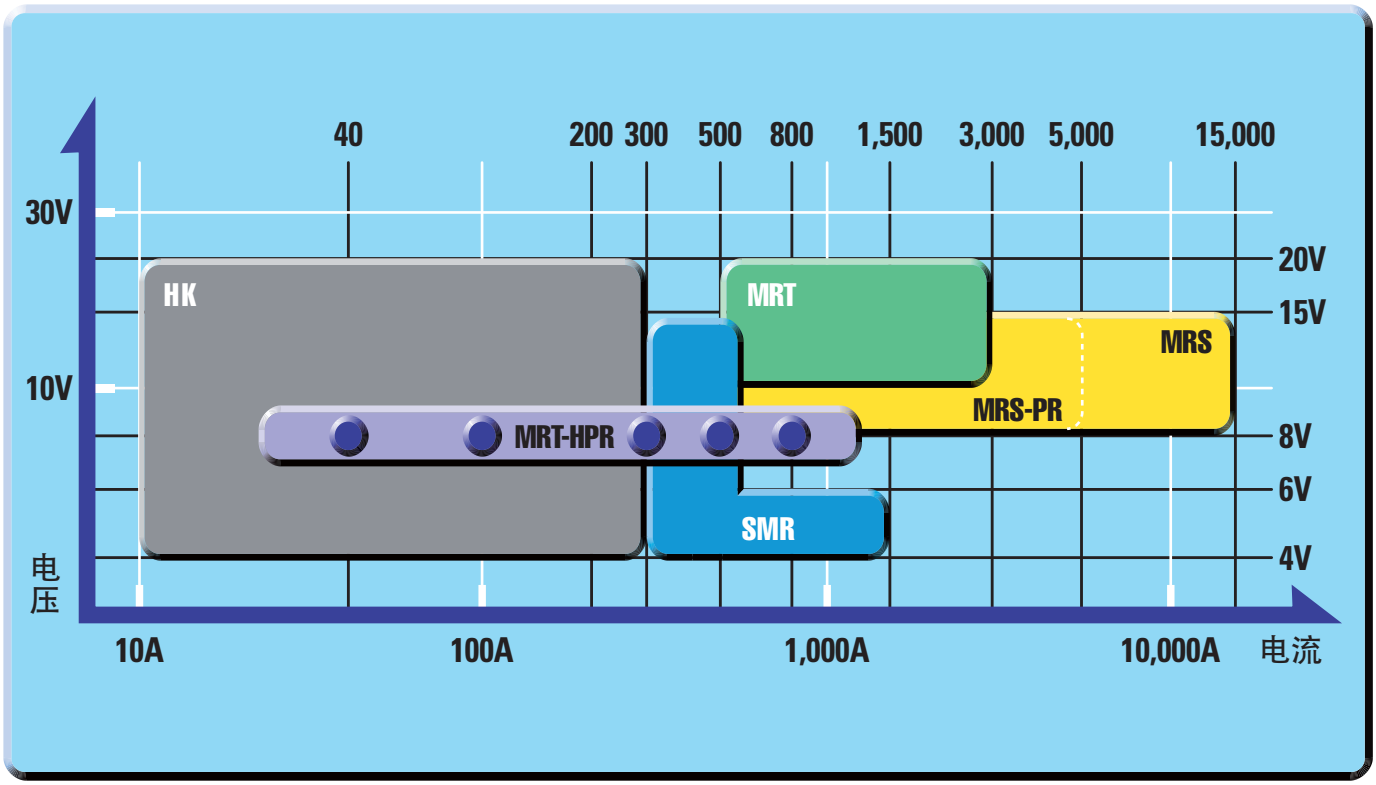
In the product of SanRex, the open network communication such as DeviceNet began to appear in the industry and was installed. It is possible to connect by this function the personal computer, the control equipment such as PLC, and between, and the match with mechanism is also easy. Troublesome program development and a special substrate by special communications such as the current remote controls and RS232C are unnecessary.
(There is something that it is not possible to correspond with a part of model.)

Power Supply for Metal Su

标准品型号系列齐全 A variety of models available in series

输出电流从实验室使用的10A到最大电流15000A，共有八个系列

It is eight kinds from for the lab of 10A in output current to a large capacity of 15,000A or less in output current.



更高的耐环境性 Improved environmental durability

内部是管道结构。仅散热片用于散热有通风道。其它电子零件全密封，减少了外界环境的影响。从而保证设备长时间稳定运行。

The interior is duct structure. Only heat sink is air-cooled. Electronic components are protected against influence from environment in order to maintain stable characteristics for along time.

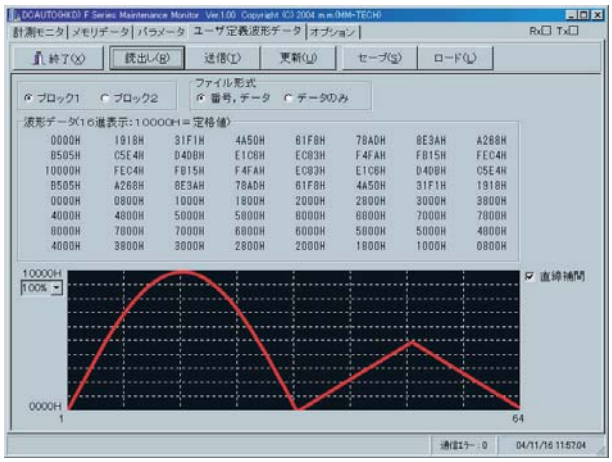
风扇使用寿命长及易更换 Fan with a long service life and easy replacement

风扇运行会依设备运行状态改变，因此风扇的使用寿命长（机械寿命），低噪音。万一发生故障时更换方便。无需拆除固定镙丝，即可替换。

Fan motion is varied by operating and there by fan has longer life (mechanically) and reduced noise. In case of defect, fan is easily replaced.

urface Treatment 金属表面处理用电源

输出波形模式的扩充 Selectable output waveform mode



任意波形模式

如果使用专用的软件，可以输出任意波形。

- 一个周期时间：5-150Hz（6.7ms-200ms）
- 波形设定方法：在波形设定软件的计算表中设定
- 一个周期的解析度：一个周期64位。

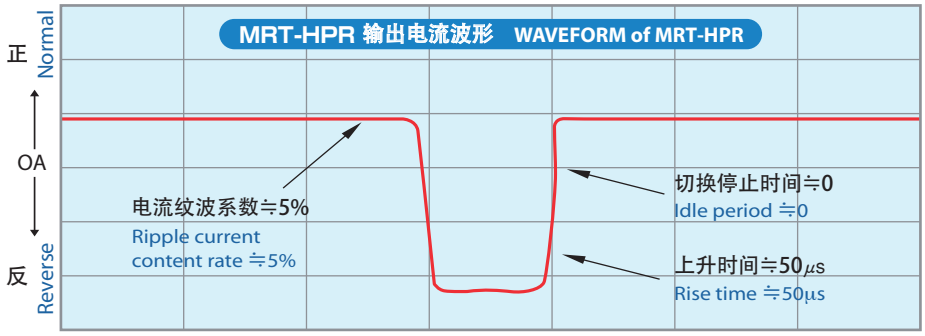
GOLDWAVE (Free waveform) mode

If dedicated software (option) is used, operation with any waveform output becomes possible.

- 1 cycle : 5 - 150Hz (6.7 - 200ms)
- Waveform setting : input by spread sheet software
- 1 cycle resolution : 64 points in one cycle

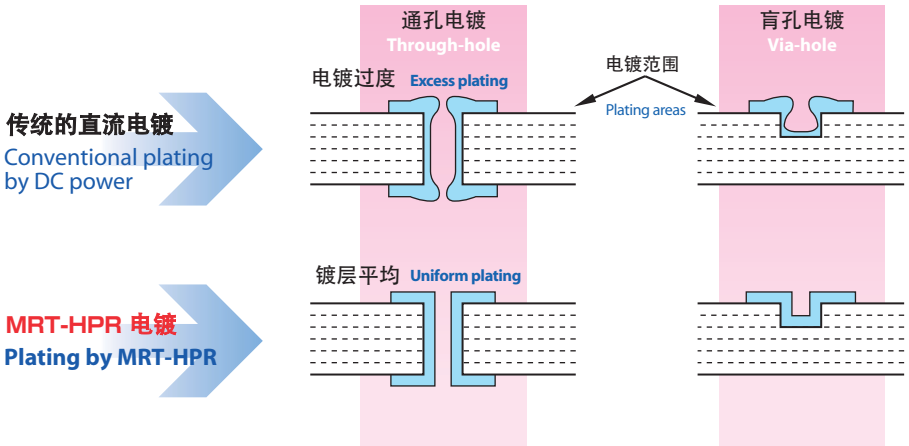
高速输出脉冲电流 High-speeding of output pulse current

- ●直流高速脉冲控制 ●DC high-speed pulse control
- ●正反脉冲高速控制 ●Positive-Reverse high-speed pulse control
- ●正反向高速切换 ●Reversible high-speed switching



由于独特的高速切换回路，输出电流的切换时间(上升和下降时间)小于50 μs，实现TYP高速化。

The newly developed high-speed switching circuit has realized high speeding of 50μ sec or less of output current polarity switching time (rise and fall time).



Products Lineup

DC AUTO HK series

实现高性能和高耐环境性的高级机型

Superior model with sophisticated functions and environmental durability

远程控制盒（选项）

Remote control pendant (Option)

远程控制盒操作简单，使用编码器调节。
这一专用的控制盒也可以用于HKE型

Remote control pendant is easily operated by a jog dial. An exclusive-use remote control pendant is provided also for HKE type.

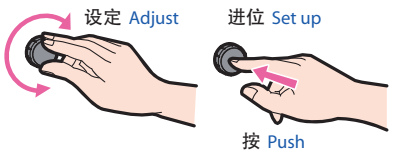
特点 Features

1. 脉冲模式运行时，最短脉冲时间: 1ms	Pulse mode operation with minimum 1msec pulsation
2. 任意波形运行模式	GOLDWAVE (Free wave form) mode
3. 高速通信功能（RS-485）	High speed communication (RS-485)
4. 电流积算功能（安培/时间计）	Current integration function
5. 记忆模式运行	Operation pattern memorizing

使用旋钮设定简单

Easy setup with jog dial

使用编码器设定输出电压，电流。转动旋钮可以调整各种数值，按下旋钮确认自动变换移动下一位数值设定。



The jog dial is used for output current and voltage setup. One dial is capable of digit-by-digit numerical value setup and moving through values, which allows easy setup.

异常显示和警报功能，故障自动诊断功能

Diagnose defects with abnormality indicator and alarm

可以分别显示异常/故障的内容，所以故障排除非常简单。出现异常时蜂鸣器会响起并且会有异常信号输出。另外当异常出现时可以选择设定为继续运行。

Individual indication of problems allows for easy analysis. Buzzer and abnormal output signal notify of defects. Continuous operation mode is also available in case of output defects.

可以叠加安装

Pilling up is allowed

设备可以叠加安装2台。
※三社电机还可以提供专用的架子(选项)可以同时叠放多台该整流器。

Units can be piled up to 2 stacks.
*For more stacks piling, we provide exclusive-use rack as an option.

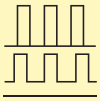
Power source for metal plating of small capacity
小容量贵金属电镀用电源

多种输出波形选择 Selectable output waveform mode

A. 任意波形模式
GOLDWAVE mode

A. 任意波形模式
如果使用专用软件（选项）可以实现任意波形输出
- 一个周期的时间：5-150HZ（6.7ms-200ms）
- 波形设定方法：在波形设定软件的计算表中设定
- 一个周期解析度：一个周期64位

A. GOLDWAVE (Free waveform) mode
If dedicated software (option) is used, operation with any waveform output becomes possible.
- 1 cycle : 5 - 150Hz (6.7 - 200ms)
- Waveform setting : input by spread sheet software
- 1 cycle resolution : 64 points in one cycle



B. 正脉冲模式
Chopper (Pulse) mode

B. 正脉冲模式
- 可输出最短时间是1ms的脉冲。
  适合用于贵金属电镀及无铅焊接电子器件电镀
- 可以多台同步运行（选项）

B. Chopper (pulse) mode
- Minimum 1msec pulsation output is possible.
- Suitable for plating precious ornament and/or lead free soldered components.
- Synchronized operation of multi-units is possible.

C. 单相全波模式
Single phase full wave mode

C. 单相全波模式
最适合用于电镀银。

C. Single phase full wave mode
Suitable for silver plating.

高速通讯功能 High speed communication

RS-485通信是标准配备。通讯速度最快38,400bps.

RS-485 communication port is equipped. Maximum communication speed is 38,400bps.

适用于各种开放式网络（选项） Open Field Network Applicability (Option)

DeviceNet™ CC-Link

在开放式网络中设备可以由以太网的简单程序进行控制。设备能够应用于目前世界上大多数的主流网络中。

With open field network, it can be controlled by simple program on sequencer side. It can be applied to most of mainstream open field networks in the world.

电流积算功能（安培/时间计算） Current integration function

内置8位的安培时间计用于控制镀层的厚度。在各种运行中可以将安培时间设定为安培小时，安培分钟或安培秒。

8-digit ampere-hour meter is built in for controlling plating thickness. Current integrated value in each pattern of operation can be shown as ampere-second, ampere-minute or ampere-hour.

项　目 Item			功　能 Function	
单　独 Individual	预设	Preset	通过旋钮设定・4位显示	Set by jog dial, 4 digit display
	计数器	Counter	4位显示	4 digit display
	设定与显示	Setting & Display	1～9999AS/ 1～9999AM 1～9999AH (通过切换)	(selectable)
全　部 Total	预设	Preset	通过旋钮设定・8位显示	Set by jog dial, 8 digit display
	计数器	Counter	8位显示	8 digit display
	设定与显示	Display	1～99999999AH	

通电时间计算 Energization Timer

通电时间计时器通过控制电镀时间来控制和管理镀层厚度。

Energization time can be controlled by a timer for controlling plating thickness.

记忆模式运行功能 Operation pattern memorizing

A. 记忆运行
搭载了可用任意设定值进行运行的记忆运行功能。整流器内置存储器，最多可存储99种任意运行数据。

B. 程序运行
可以将记忆在存储器中的数据组合起来连续运行。

A. Memorized operation
Memorized operation function workable at any set values is provided.
99 patterns of operation parameters can be memorized.

B. Patterned operation
Continuous operation at different parameters memorized in memorized operation.

项　目 Item		功　能 Function
内存 (设定条件) Memory (Parameters setting)	99种模式 99 patterns	可使用操作模式选择键设定参数 （例如）内存1 CV设定: 8.0V 预设: 150AM　内存2 CC设定: 150A 如上所示，不同的参数可分别记忆在内存中，并通过单键操作集成到各操作条件中，执行操作。 With operation mode select key, parameters can be set. Memory 1: CV: 8.0V, preset 150AM　Memory 2: CC: 150A As shown above, different parameters are memorized individually and integrated into any operation conditions by one-touch operation.

DC AUTO HK series

共同规格 Common specification

控制方式 Control method			PWM控制切换方式 PWM control switching method			
输入 Input	电 压 Voltage	单相 Single phase	100/200V	(变换※) (Changeover)	100/110/200/220/230V
			200V	(专用) (Exclusive use)	200/220/230V
		三相 3-phase	200/400V	(变换※) (Changeover)	200/220/230/380/400/440V
	频 率 Frequency	50/60Hz			
	电压范围 Voltage range	±10%			
输出 Output	控 制 Control	恒流或恒压 Constant current or constant voltage			
	可调整范围 Adjustable range	0~额定值（电流，电压） 0 - Rated value (Current, Voltage)			
	精 度 Precision				
	输入电源浮动 Input voltage fluctuation	额定值±0.5%以内 Rated value ±0.5% within			
	负载浮动 Load fluctuation	额定值±0.5%以内（输出电压10~100%） Rated value ±0.5% within (output voltage 10 - 100%)			
	误差 Ripple	RMS 1%以下(对于在额定输入, 输出时的额定值) RMS 1% or below (of rated value at rated input/output)			

※: 自动识别输入电压，通过单键操作变换。 Input voltage is automatically recognized and changed by one touch operation.

产品列表 Product List

输出电流 Output Current \ 输出电压 Output Voltage		4V 订购产品 Product made to order	8V 标准产品 Standard Product	12V 订购产品 Product made to order	15V 标准产品 Standard Product	20V 订购产品 Product made to order
10A	输入 input	单相100/200V Single phase (变换 ※2 Changeover)				
	输入kVA input kVA	0.10	0.18	0.26	0.33	0.43
	外壳 Outer case ※1	A类型 A type				
	冷却方式 Cooling method	自然散热 Natural cooling				
20A	输入 input	单相100/200V Single phase (变换 ※2 Changeover)				单相200V(专用) Single phase 200V (Exclusive use)
	输入kVA input kVA	0.19	0.36	0.51	0.63	0.83
	外壳 Outer case ※1	A类型 A type				
	冷却方式 Cooling method	自然散热 Natural cooling				强制冷却 Forced air cooling
30A	输入 input	单相100/200V Single phase (变换 ※2 Changeover)			单相200V(专用) Single phase (Exclusive use)	
	输入kVA input kVA	0.28	0.53	0.75	0.93	1.23
	外壳 Outer case ※1	A类型 A type				
	冷却方式 Cooling method	自然散热 Natural cooling		强制冷却 Forced air cooling		
50A	输入 input	单相200V(专用) Single phase (Exclusive use)				
	输入kVA input kVA	0.45	0.84	1.22	1.52	2.01
	外壳 Outer case ※1	A类型 A type				
	冷却方式 Cooling method	强制冷却 Forced air cooling				
100A	输入 input	单相200V(专用) Single phase (Exclusive use)		三相200/400V Three phase (变换 ※2 Changeover)		
	输入kVA input kVA	0.88	1.69	2.41	3.05	3.48
	外壳 Outer case ※1	A类型 A type		B类型 B type		
	冷却方式 Cooling method	强制冷却 Forced air cooling				
150A	输入 input	三相200/400V Three phase (变换 ※2 Changeover)				
	输入kVA input kVA	1.14	2.20	3.17	3.92	5.16
	外壳 Outer case ※1	B类型 B type				C类型 C type
	冷却方式 Cooling method	强制冷却 Forced air cooling				
200A	输入 input	三相200/400V Three phase (变换 ※2 Changeover)				
	输入kVA input kVA	1.48	2.86	4.18	5.16	6.80
	外壳 Outer case ※1	B类型 B type				C类型 C type
	冷却方式 Cooling method	强制冷却 Forced air cooling				
300A	输入 input	三相200/400V Three phase (变换 ※2 Changeover)				–
	输入kVA input kVA	2.22	4.29	6.18	7.74	–
	外壳 Outer case ※1	C类型 C type				–
	冷却方式 Cooling method	强制冷却 Forced air cooling				–

※1: 有关外壳的尺寸，请参见外壳尺寸图的尺寸表。
As for dimensions of outer case, see "external dimensions diagram".

※2: 自动识别输入电压，通过单键操作变换。
Input voltage is automatically recognized and changed by one touch operation.

功能列表 Functions

功能 Function \ 型号名 Model / 输出电流 Output current	HKD 10~300A	HKE 20~300A	HKE 10A
触摸屏启动/停止 Panel start/stop	●	●	–
外部启动/停止 External start/stop	●	●	●
输出调整 Output adjustment	●	●	●
CC/CV选择 CC/CV selection	●	●	●
输出波形选择 Output waveform selection	●	–	–
数字电压表 Digital voltmeter	●	●	●
数字安培表 Digital ammeter	●	●	●
预设计数器 Preset counter	●	–	–
总计数器 Total counter	●	–	–
外部命令 External command	○	●	–
输出电流监视器 Output current monitor	○	●	–
输出电压监视器 Output voltage monitor	○	●	–
异常输出 Abnormal output	○	●	–
开放网络环境 Open field network ※3	○	–	–
RS-485通信 RS-485 communication	●	–	–
远程控制 Remote control	○	○	–
软启动 Soft start	●	●	–
交叉控制 Crossover control	○	○	–
初始电流设定 Initial current setting	●	○	–

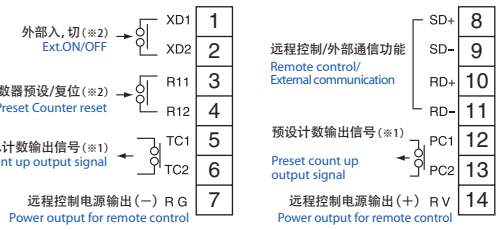
●: 标准 Standard ○: 可选 Option –: 不可用 Not available

※3: 为开放网络环境，"DeviceNet™" "CC-Link"分别提供了专用的电路板。
We provide dedicated PCBs for "DeviceNet™" "CC-Link" respectively.

Power source for plating of small capacity
小容量贵金属电镀用电源

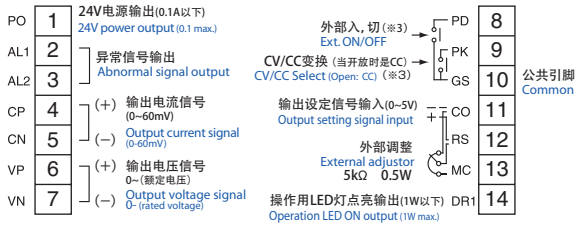
外部连接图 External connection diagram

HKD 控制终端 Control terminal



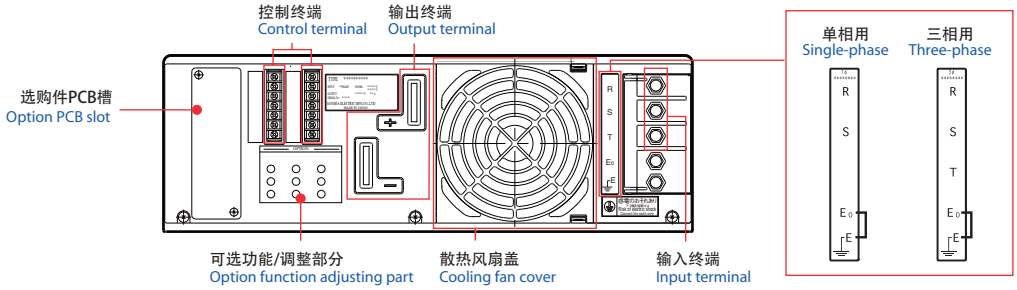
注意 Note
- ※1: 接点额定值是AC125V 0.5A/DC24V 0.5A (抵抗负载)。 Contact rating is AC125V 0.5A/ DC24V 0.5A (Resistive Load)
- ※2: 对于外部连接请使用DC30V, 20mA可以关闭的连接信号。 For actuation, use a contact signal which is capable of switching on/off DC 30V 20mA.

HKE 控制终端 Control terminal

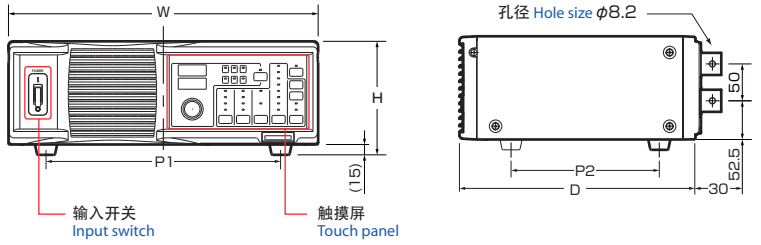


注意 Note
- ※3: 对于外部连接请使用DC30V, 20mA可以关闭的连接信号。 For actuation, use a contact signal which is capable of switching on/off DC 30V 20mA.
- CP-CN和VP-VN之间是未绝缘。 CP and CN, and VP and VN are not insulated.
- RS-CO之间的信号必须隔离。 The signal given between RS and CO must be insulated.

背面 Rear surface

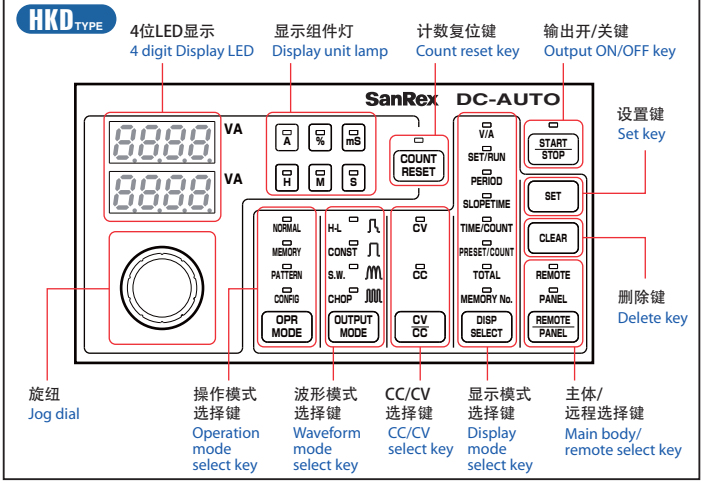


外形尺寸图 External dimension diagram

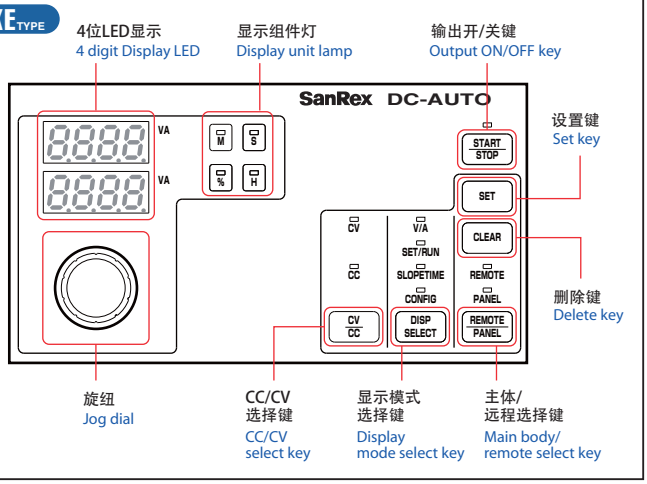


型号 Type	尺寸 Dimension (mm) W(宽度) (Width)	H(高度) (Height)	D(深度) (Depth)	P1	P2	质量 Weight (kg)
A type	420	155	325	318	201	9
B type	420	155	500	318	381	14
C type	420	155	670	318	500	23

HKD TYPE



HKE TYPE



型号识别 How to read the model

HKD-15100F

- 额定输出电压 Rated output voltage ex) 8 …… 8V, 15 …… 15V
- D: HKD type, E: HKE type
- 额定输出电流 Rated output current ex) 10 …… 10A, 50 …… 50A, 100 …… 100A

SMART Mini-Rex MRT series

远程控制盒

Remote control pendant

特点 Features

1. 型号齐全

●输出电压：10/15/20V
●输出电流：500/1000/1500/2000/3000A

Abundant Lineup.

· Output voltage: 10/15/20V
· Output current: 500/1000/1500/2000/3000A

2. 输入电压范围广，适用于全世界各种输入电压

●标准日本使用规格200~220V，增添了海外使用380~440V

Applicable to various input voltage for worldwide.

Lineup to 200 - 220V & 380 - 440V.

3. 采用数字技术，功能更强

●运行前可以预先设定输出值（预设功能）
●高精度化。控制精度可达±0.5%（选项）

Function improvement by the digital technology.

· Output setting is possible before operation. (Preset function)
· Output precision can be ±0.5% or below. (Option)

4. 新设计，操作简单。在遥控盒上使用旋钮设定

●输出电压，电流值采用刻度编码器进行设定
●使用带刻度调整旋钮可以调整各个数值，设定完成后向下按就会跳到下一位数值设定

New Design. Easy setting by jog dial on remote control pendant.

· A jog dial employed to set output current and voltage.
· By rotating jog dial, value in each figure can be adjusted, and then by pushing jog dial the value is set and moved up to next figure.

5. 提高耐环境性

●采用本公司独特的涂装处理及结构，加强密闭性和耐恶劣环境性。
●减少了周围环境对整流器的影响，更能长期稳定地运行。

More durable against severe environment.

· Tightly sealing treatment or coating treatment has improved environment proof quality.
· Power source are protected against influence from environment in order to maintain stable characteristics for a long time.

6. 以异常显示・警报功能，自行诊断故障

●各种异常和故障会分别地显示出来，故障排除更加容易

Defect diagnosis by abnormality indication and alarm function.

Contents of troubles/defects are individually shown and therefore trouble-shooting is easy.

7. 扩展功能（选项）

●任意波形输出模式
●电流积算功能（安培时间计）
●开放式网络
●高速通信功能（RS-485）
●记忆模式运行功能

Optional function

· If dedicated software and I/F is used, operation with any waveform output becomes possible.
· Current integration function
· Open Field Network Applicability
· High Speed Communication
· Operation pattern memorizing

规格 Specification

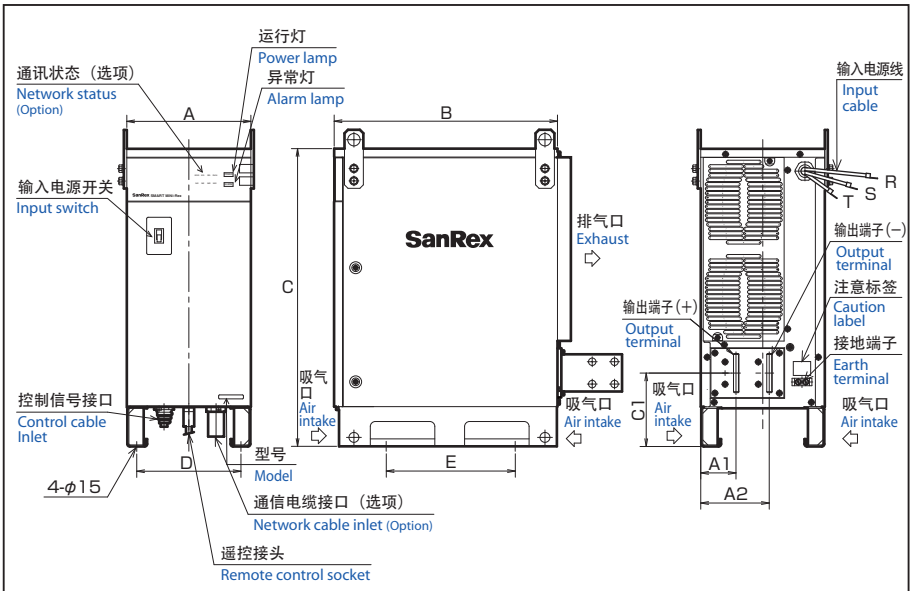
型　号 Type		当输出为15V的时候是15，当输出为20V的时候是20 If output: 15V → 15005, If output: 20V → 20005								
		MRT-10005B	MRT-15005B	MRT-10010B	MRT-15010B	MRT-10015B	MRT-15015B	MRT-10020B	MRT-15020B	MRT-10030B
输出	Output	10V-500A	15V-500A	10V-1000A	15V-1000A	10V-1500A	15V-1500A	10V-2000A	15V-2000A	10V-3000A
输入电压	Input voltage	三相 3-phase AC200/220V ±10% or AC380/400/440V ±10% 50/60Hz								
输出范围	Output range	电压，电流共通 额定值的10～100% Voltage & Current: 10 to 100% of the rated value								
输入容量	Input capacity	6.5kVA	11.1kVA	13kVA	20.4kVA	20kVA	30.2kVA	26kVA	40.7kVA	39.5kVA
控制方式	Control	IGBT 脉冲调宽控制 PWM inverter controlled by IGBT								
额定・冷却方式	Rated, Cooling	连续・强制风冷 Continuous / Forced air cooling								
定电压控制精度	Constant voltage control accuracy	额定直流电压值的±3%以内 Within ±3% of rated DC voltage								
定电流控制精度	Constant current control accuracy	额定直流电流值的±3%以内 Within ±3% of rated DC current								
纹波系数	Current ripple factor	5%以下（300/360Hz成分） 5% or below (300/360Hz component)								
使用条件 Working condition	安装场所 Location	屋内 Indoors								
	周围温度 Ambient temperature	0℃～40℃								
	相对湿度 Relative humidity	30%～85%								
	海拔高度 Altitude	1000m以下 1000m or below								

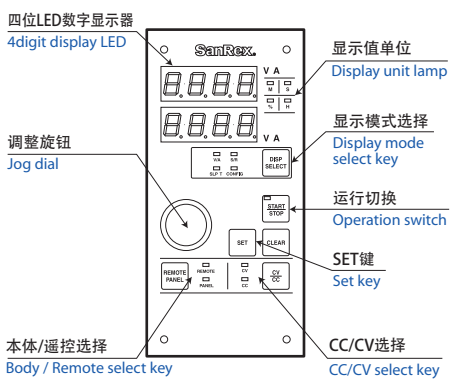
IGBT inverter type power source for various platings
各种电镀用逆变电源

外形尺寸 Specification

型号 Type	输出 Output	尺寸(mm) Outline								质量 (kg) Weight	输出端子图 Output terminal
		A	B	C	D	E	A1	A2	C1		
MRT-10005B	10V- 500A	250	450	600	210	260	71	138	148	40	(1)
MRT-15005B	15V- 500A	250	450	600	210	260	71	138	148	48	(1)
MRT-10010B	10V-1000A	250	450	600	210	260	71	138	148	48	(2)
MRT-15010B	15V-1000A	250	450	600	210	260	71	138	148	55	(2)
MRT-10015B	10V-1500A	250	450	600	210	260	71	138	148	55	(2)
MRT-15015B	15V-1500A	360	570	750	320	380	80	230	180	89	(2)
MRT-10020B	10V-2000A	360	570	750	320	380	80	230	180	89	(3)
MRT-15020B	15V-2000A	360	570	900	320	380	80	230	180	112	(3)
MRT-10030B	10V-3000A	360	570	900	320	380	80	230	180	112	(4)

外形尺寸图 (mm) External dimension diagram

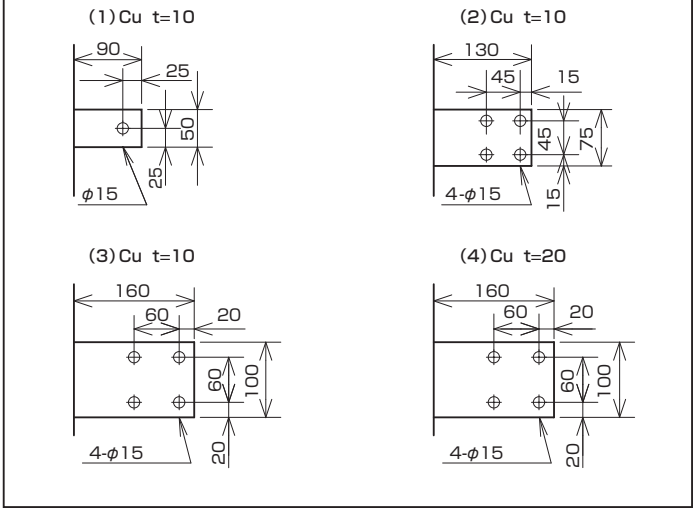




■ 标准遥控线10米（最长30米）
A 10-meter cable is attached (it can be extended up to 30 meter).

远程控制盒
Remote control pendant

输出端子图 (mm) Output terminal



型号识别 How to read the model

MRT-10005B

额定输出电压
Rated output voltage
10 ···· 10V
15 ···· 15V
20 ···· 20V

额定输出电流
Rated output current
005 ···· 500A
010 ····1000A
015 ····1500A
020 ····2000A
030 ····3000A

M POWER MRT-HPR series

远程控制盒（选项）

Remote control pendant (Option)

特点 Features

1. 高速输出脉冲电流（50μs TYP）

参照第4页 Refer to 4 pages

High-speeding of output pulse current (50μs or less)

2. 输出电流极性转换时无休止时间

No generation of idle period during output current polarity switching operation

传统的输出电流正负极转换时会产生一个休止区。新的正负转换方法将不会产生休止区，有利于提高产品质量。

In switching the output current pulse polarity, an idle period has been momentarily generated in a conventional method, but there is no such idle period in this new method realizing high-quality plating.

3. 降低输出电流纹波（输出电流纹波系数低）

Reduction of ripple of output current

输出电流中含有的纹波电流会造成镀层表面光泽度不够。本装置采用高频变极电路工艺将电流纹波降至5%以下，解决了表面光泽度不足问题。

Output ripple current may cause insufficient glossing of the plated surfaces. This device has reduced the ripple content to 5% or less solving the problem of insufficient glossing due to the high frequency inverter circuit technology.

4. 型号，种类齐全 Abundant series

输出电流最小40A，最大800A，共5种型号。

There are abundant series in 5 types ranging from laboratory type of 40A output current to large-capacity type of 800A max.

5. 输出波形转换 Output wave form switching possible

依照客户需求可设置为直流输出，正脉冲输出，正反脉冲输出。

It is free to select the DC output , pulse output of positive side only, and positive/reverse pulse output according to the purpose.

6. 并联同步运行功能

Parallel operation by synchronous operation function

此电源具有同步运行功能，可以多台同时并联运行。
可获得电镀物表里的平均性和大型电镀物的安定品质。(选项)

This power source employs a synchronous operation function and is able to perform parallel operation by multiple units. It assures uniform plating on the surface and back of the object and high-quality stable plating of large-sized objects. (Option)

7. 测量监控功能 Measurement monitoring function

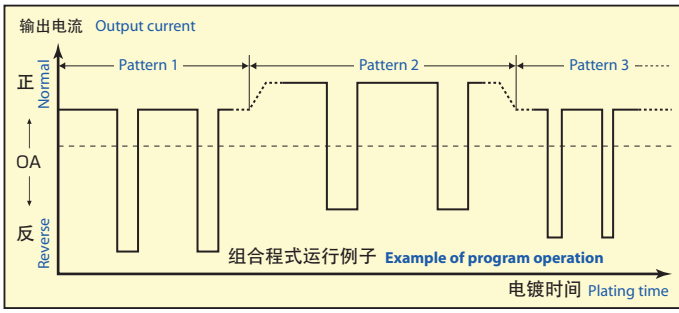
RS-485通讯接口是标准配备，可以在人机界面上进行控制。具有输出监控功能，和电流累计（安培/小时），及其它功能。而且备有的专用软件可以简单设定实验用输出条件等复杂的设定。

The main body is furnished with RS-485 communication port as standard specification, and multiple power sources can be controlled from a personal computer. Also, it is able to monitor the power output and to display the total current, etc. thereby assuring reliability in use. Further, a personal computer software capable of easily setting the output condition, etc. is available to be used for experiment. (Option)

8. 程序运行功能 Program operation function

内部存储器可以存放10种运行模式，一个模式可以包含正反脉冲，峰值电流，脉冲宽度和每个模式的运行时间。可以多个单独模式编制组合运行。最多可以10个模式组合运行。

It stores up to 10 patterns in the memory, one pattern including a combination of normal/reverse pulse peak current value, pulse width and plating time of each normal/reverse polarity. and it is possible to perform program operation with individual patterns combined in order.

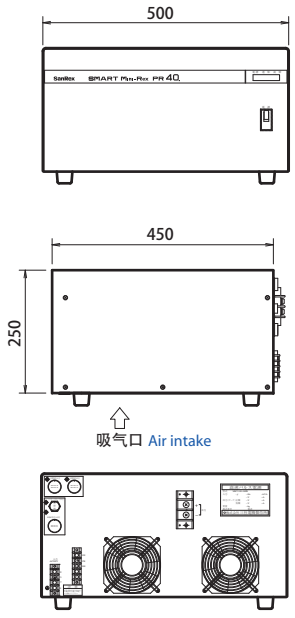


High-accuracy plating high-speed PR (Positive-Reverse changeover) pulse power source
高精度电镀用高速PR(正反反转)脉冲电源

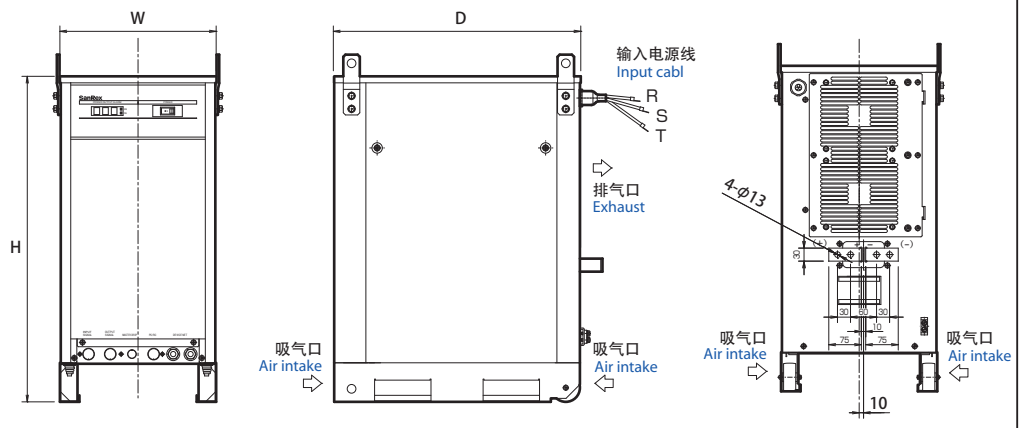
规格 Specification

型 号 Type			MRT-800R4HPR	MRT-8001HPR	MRT-8003HPR	MRT-8005HPR
输 出 Output	正向峰值电流	Normal peek current	40A	100A	300A	500A
	反向峰值电流	Reverse peek current	100A	300A	900A	1500A
	定电流控制精度	Constant current control accuracy	±3.0%			
	正向脉冲宽度	Normal polarity pulse width	10～99.9ms			
	反向脉冲宽度	Reverse polarity pulse width	0.1～2.0ms			
	正反向电流转换时间	Normal/reverse current switching time	50μs (TYP)			
	正向峰值电压	Normal polarity voltage peak value	8V			
	反向峰值电压	Reverse polarity voltage peak value	15V			
	正反向脉冲比例	Normal/reverse pulse ratio	5:1以上 5:1 or over			
输入电压		Input voltage	三相 3-phase AC200/220V ±10% 50/60Hz			
主电路系统		Main circuit system	IGBT PWM 逆变系统 PWM inverter controlled by IGBT			
额定・冷却方式		Rated, Cooling	连续, 强制风冷 Continuous / Forced air cooling			
运转环境温度		Ambient temperature for operation	0～40℃			
尺 寸 Dimensions	宽度（W）	Width	500mm	360mm	360mm	360mm
	高度（H）	Height	277mm	750mm	800mm	900mm
	深度（D）	Depth	450mm	570mm	670mm	770mm
质 量		Weight	50kg	80kg	120kg	170kg

外形尺寸图 (mm) External dimension diagram



MRT-800R4HPR



MRT-8001HPR・MRT-8003HPR・MRT-8005HPR・MRT-8008HPR

型号识别 How to read the model

MRT-8001HPR

额定输出电压
Rated output voltage
8 ···· 8V

正向峰值电流
Normal peek current
00R4 ···· 40A　003 ···· 300A
001 ···· 100A　005 ···· 500A

SUPER MINI-REX MRS series

远程控制盒

Remote control pendant

特点 Features

1. 提高耐环境性・耐久性

采用高性能绝缘可控硅，环氧树脂防止型特殊变压器以及核心控制线路的全密闭隔离方式，提高了耐环境性・耐久性。

Hight-quality and environment-proof

Environment-proof quality has been improved due to introducing a first-rate insulation type thyristor, epoxy-sealed special transformer, and tightly closed up control circuit – one of its key components.

2. 节能，省电

采用大容量低损耗二极管(500A)。内部结构单一化，达到节省能源。

Energy-saving type

The MRS series incorporates a large-capacity low-loss multi diode (500A) to simplify the internal makeup, resulting in saving energy.

3. 小形化，重量轻，节约空间

三社电机独特的冷却系统使整流器小形化，轻量化。正面尺寸大大减小节省空间。5000A以下的同一型号电源可以叠加安装。

Compact, light, and space-saving

SanRex unique cooling system produces an extremely light compact product. The front dimension is reduced, therefore requiring less floor area and thus saving space. A unit can be mounted on another unit of the same size (up to 5,000A).

4. 完善的保护功能

●定电压运行时的电流限制功能，定电流运行时的电压限制功能，使整流得到保护
●内部装有温度异常检出装置，当风扇停止等冷却系统异常时对整流器进行保护。
●整流器停止时，风扇不运转。

Complete protection functions

- The rectifier is protected by either of its built-in circuits; a current-limiting circuit that functions under constant voltage operation or a voltage-limiting circuit that functions under constant current operation.
- The rectifier is protected against problems in the cooling system by a built-in abnormal temperature detector in case of a fan failure or the like.
- The fan stops when the rectifier is not running.

5. 控制功能

●软启动功能
●CV-CC切换设定功能
●下点电压设定功能
●下点电流设定功能
●定电流密度设定功能
●输出电压，输出电流独立设定功能 (交叉控制)(选项)

Efficient control functions

- Function for soft start
- Function for setting CV–CC changeover
- Function for setting lower limit of current
- Function for setting lower limit of voltage
- Function for setting constant current density
- Function for independently setting output voltage and output current (crossover control) optional.

规格 Specification

型　号 Type	当输出为8V的时候是8005, 当输出为15V的时候是15005　If output: 8V → 8005, If output: 15V → 15005											
	MRS-12005	MRS-12010	MRS-12015	MRS-12020	MRS-12030	MRS-12040	MRS-12050	MRS-12060	MRS-12070	MRS-12080	MRS-12100	MRS-12120	MRS-12150
输出 Output	12V-500A	12V-1000A	12V-1500A	12V-2000A	12V-3000A	12V-4000A	12V-5000A	12V-6000A	12V-7000A	12V-8000A	12V-10000A	12V-12000A	12V-15000A
输入电压 Input voltage	三相 3-phase AC200V ±10% 50/60Hz												
输出范围 Output range	电压1/3~额定电压值/电流额定值10%~100%　Voltage: 1/3 - rated voltage, Current: 10 to 100% of the rated current												
输入容量 Input capacity	7kVA	16kVA	24kVA	32kVA	47kVA	63kVA	77kVA	94kVA	109kVA	125kVA	158kVA	191kVA	239kVA
控制方式 Control method	晶闸管连续无级控制　Thyristor-based continuous step less control												
额定・冷却方式 Rated, Cooling	连续・强制风冷　Continuous / Forced air cooling												

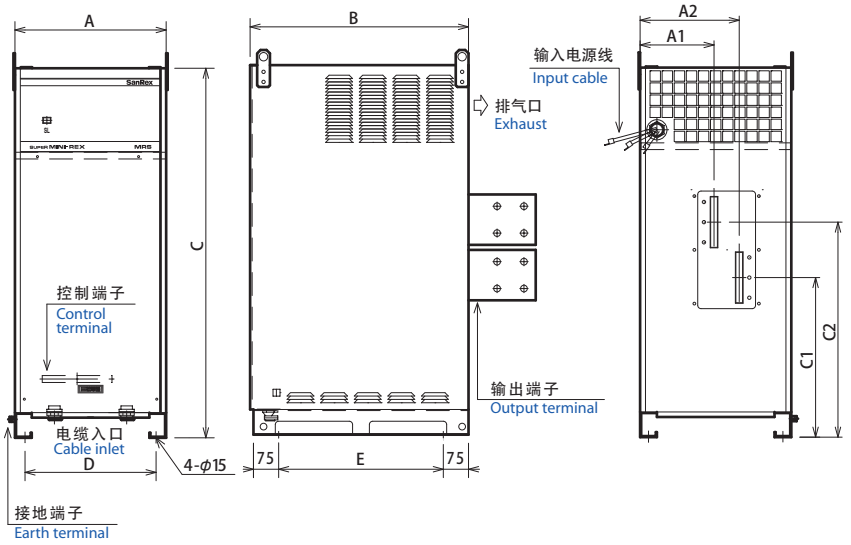
Power supply units for various automatic platings
各种电镀用可控硅电源

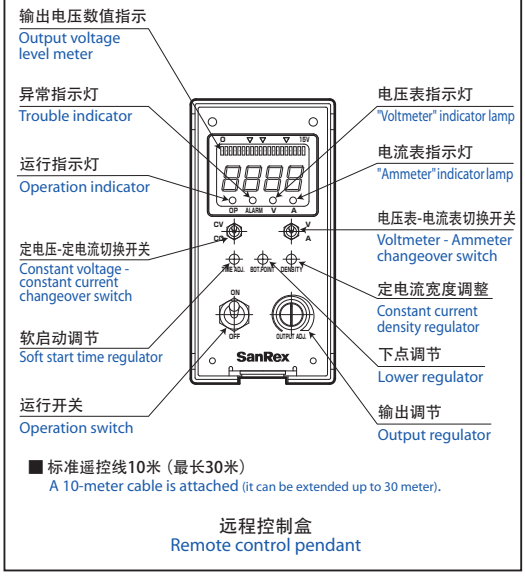
外形尺寸 Specification

型号 Type	输出 Output	尺寸(mm) Outline									质量 (kg) Weight	输出端子图 Output terminal
		A	B	C	D	E	A1	A2	C1	C2		
MRS-12005	12V- 500A	300	500	700	240	340	60	100	305	400	90	(1)
MRS-12010	12V- 1000A	330	550	850	270	390	155	230	355	635	140	(2)
MRS-12015	12V- 1500A	330	550	850	270	390	155	230	355	635	160	(3)
MRS-12020	12V- 2000A	450	650	1100	390	490	220	295	475	640	240	(4)
MRS-12030	12V- 3000A	450	650	1100	390	490	220	295	475	640	270	(5)
MRS-12040	12V- 4000A	530	700	1450	470	540	185	265	560	840	420	(6)
MRS-12050	12V- 5000A	530	700	1450	470	540	185	265	560	840	450	(6)
MRS-12060	12V- 6000A	650	950	1450	550	790	230	400	640	900	630	(7)
MRS-12070	12V- 7000A	700	1000	1550	600	840	240	440	710	1025	850	(8)
MRS-12080	12V- 8000A	700	1000	1550	600	840	240	440	710	1025	920	(8)
MRS-12100	12V-10000A	700	1000	1550	600	840	240	440	710	1025	1000	(9)
MRS-12120	12V-12000A	800	1100	1750	700	940	290	490	785	1125	1300	(9)
MRS-12150	12V-15000A	800	1100	1750	700	940	290	490	785	1125	1500	(10)

当输出为8V的时候是8, 当输出为15V的时候是15 If output: 8V → 8, If output: 15V → 15

外形尺寸图 (mm) External dimension diagram

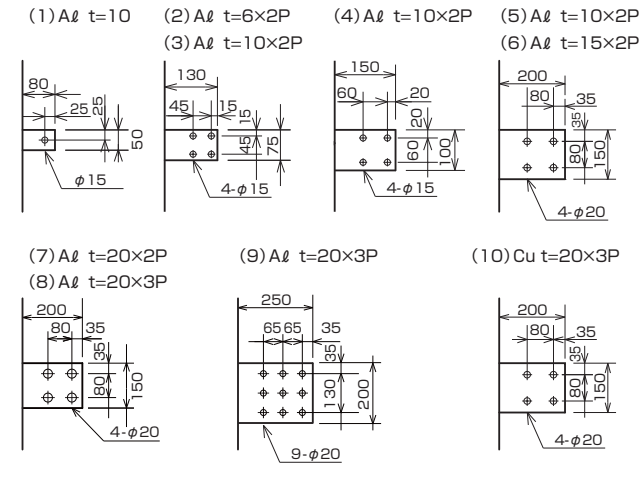




■ 标准遥控线10米（最长30米）
A 10-meter cable is attached (it can be extended up to 30 meter).

远程控制盒
Remote control pendant

输出端子图 (mm) Output terminal



型号识别 How to read the model

MRS-12050

额定输出电压
Rated output voltage
8 ···· 8V
12 ···· 12V
15 ···· 15V

额定输出电流
Rated output current

005 ···· 500A	040 ····4000A	100 ···· 10000A
010 ····1000A	050 ····5000A	120 ···· 12000A
015 ····1500A	060 ····6000A	150 ···· 15000A
020 ····2000A	070 ····7000A	
030 ····3000A	080 ····8000A	

SUPER MINI-REX MRS-PR series

远程控制盒

Remote control pendant

特点 Features

1. 高信赖性的无触点转极方式

A highly reliable non-contact pole changing system

采用完全自动无触点的转极方式，提高了极性转换的可靠性，将PR电源的性能充分的发挥出来。

A fully automatic non-contact pole changing system is adopted so that reliable pole change is able to function best as a PR power source.

2. 正反向输出平稳自由地调节

The current can be freely and smoothly adjusted either to forward operation or backward operation

正反向电流可以自由地任意地调整。正反向可设定60秒的任意时间。如果电镀不需要PR功能时可以设成直流电源使用。

The current can be freely and smoothly adjusted either to forward operation or backward operation, and a 60-second time setting can be arbitrarily made. The product can be used with direct current only so that it can be also used for plating for which no PR is necessary.

3. 提高耐环境性・耐久性

Hight-quality and environment-proof

采用高性能绝缘可控硅，环氧树脂防止型特殊变压器以及核心控制线路的全密闭隔离方式，提高了耐环境性和耐久性。

Environment-proof quality has been improved due to introducing a first-rate insulation type thyristor, epoxy-sealed special transformer, and tightly closed up control circuit – one of its key components.

4. 节能，省电

Energy-saving type

采用大容量低损耗二极管(400A)。内部结构单一化，达到节省能源。

The MRS-PR series incorporates a large capacity isolated thyristor (400A) to simplify the internal makeup, resulting in saving energy.

5. 小形化，重量轻，节约空间

Compact, light, and space-saving

三社电机独特的冷却系统使整流器小形化，轻量化。正面尺寸大大减小节省空间。5000A以下的同一型号电源可以叠加安装。

SanRex unique cooling system produces an extremely light compact product. The front dimension is reduced, therefore requiring less floor area and thus saving space. A unit can be mounted on another unit of the same size (up to 5,000A).

6. 完善的保护功能

Complete protection functions

- ●定电压运行时的电流限制功能，定电流运行时的电压限制功能，使整流得到保护。
  The rectifier is protected by either of its built-in circuits; a current-limiting circuit that functions under constant voltage operation or a voltage-limiting circuit that functions under constant current operation.
- ●内部装有温度异常检出装置，当风扇停止等冷却系统异常时对整流器进行保护。
  The rectifier is protected against problems in the cooling system by a built-in abnormal temperature detector in case of a fan failure or the like.
- ●整流器停止时，风扇不运转。
  The fan stops when the rectifier is not running.

7. 控制功能

Efficient control functions

- ●软启动功能
  Function for soft start
- ●CV-CC切换设定功能
  Function for setting CV–CC changeover
- ●下点电压设定功能
  Function for setting lower limit of current
- ●下点电流设定功能
  Function for setting lower limit of voltage
- ●定电流密度设定功能
  Function for setting constant current density

规格 Specification

型　号 Type	当输出为8V的时候是8, 当输出为15V的时候是15 If output: 8V → 8005PR, If output: 15V → 15005PR						
	MRS-12005PR	MRS-12010PR	MRS-12015PR	MRS-12020PR	MRS-12030PR	MRS-12040PR	MRS-12050PR
输出 Output	12V-500A	12V-1000A	12V-1500A	12V-2000A	12V-3000A	12V-4000A	12V-5000A
输入电压 Input voltage	三相 3-phase AC200V ±10% 50/60Hz						
输出范围 Output range	电压1/3~额定电压值/电流额定值10%~100% Voltage: 1/3 - rated voltage, Current: 10 to 100% of the rated current						
输入容量 Input capacity	7kVA	16kVA	24kVA	32kVA	47kVA	63kVA	77kVA
控制方式 Control	晶闸管连续无级控制 Thyristor-based continuous stepless control						
额定·冷却方式 Rated, Cooling	连续·强制风冷 Continuous / Forced air cooling						

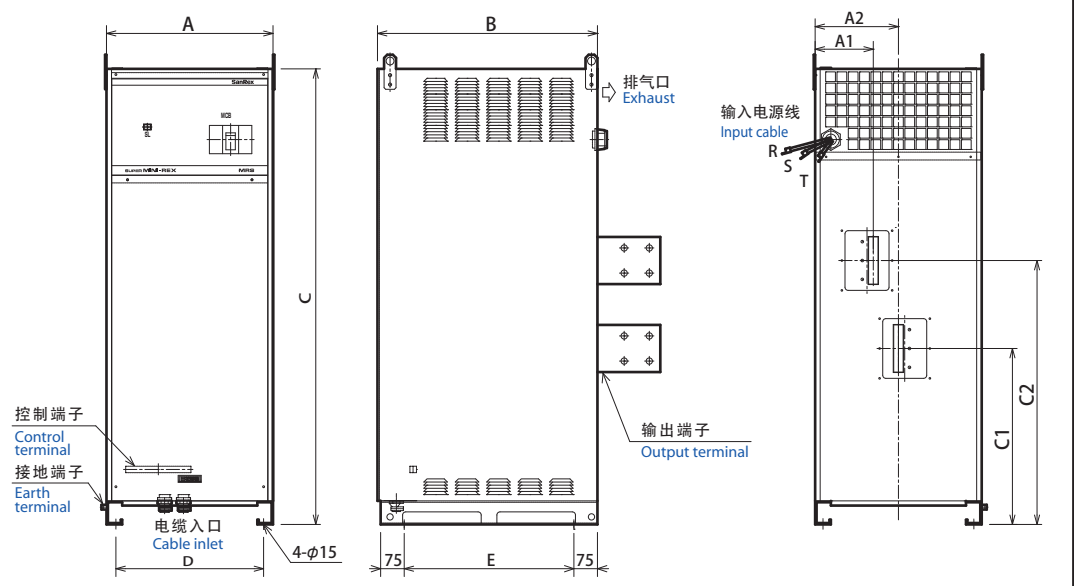
For electro decreasing chromium plating
电解脱脂用/硬质铬电镀用可控硅PR整流器

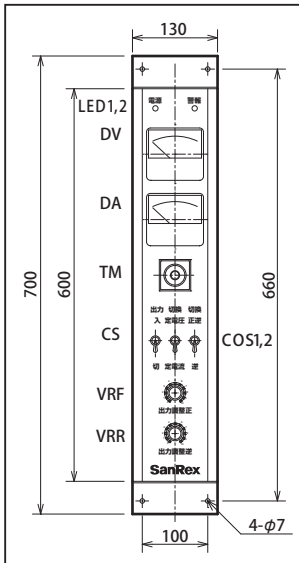
外形尺寸 Specification

型号 Type	输出 Output	尺寸(mm) Outline									质量 (kg) Weight	输出端子图 Output terminal
		A	B	C	D	E	A1	A2	C1	C2		
MRS-12005PR	12V- 500A	300	500	700	240	340	150	190	290	500	95	(1)
MRS-12010PR	12V-1000A	330	550	850	270	390	155	230	355	635	150	(2)
MRS-12015PR	12V-1500A	330	550	850	270	390	115	230	355	635	180	(3)
MRS-12020PR	12V-2000A	450	650	1100	390	490	220	295	475	640	250	(4)
MRS-12030PR	12V-3000A	450	650	1100	390	490	220	295	475	640	300	(5)
MRS-12040PR	12V-4000A	530	700	1450	470	540	185	265	560	840	450	(6)
MRS-12050PR	12V-5000A	530	700	1450	470	540	185	265	560	840	480	(7)

当输出为8V的时候是8, 当输出为15V的时候是15　If output: 8V → 8005PR, If output: 15V → 15005PR

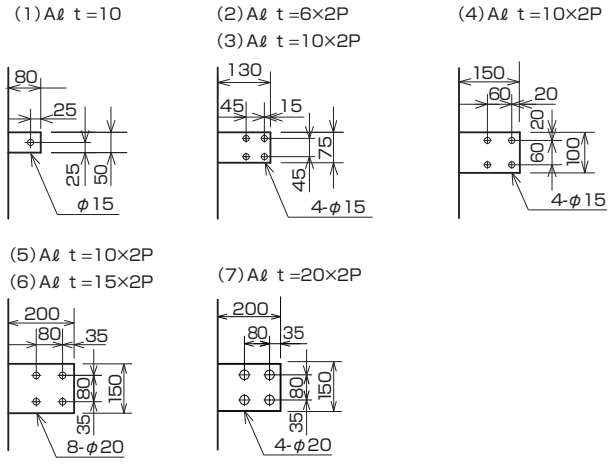
外形尺寸图 (mm) External dimension diagram





远程控制盒
Remote control pendant

输出端子图 (mm) Output terminal



型号识别 How to read the model

MRS-12050PR

额定输出电压
Rated output voltage

8 ···· 8V
12 ···· 12V
15 ···· 15V

额定输出电流
Rated output current

005 ···· 500A
010 ····1000A
015 ····1500A
020 ····2000A
030 ····3000A
040 ····4000A
050 ····5000A

SMART Mini-Rex SMR series

特点 Features

1. 输出电压6V
输出电流300/600/750/1000/1200/1500A
**Output voltage 6V,
Output current 300/600/750/1000/1200/1500A**

2. 高精度
定电压・定电流控制精度在额定值1%以下
High accuracy
Both voltage and current are 1% or less for constant.

3. 数定式电压/电流显示器（标准配置）
Equipped with digital voltage and current display as standard

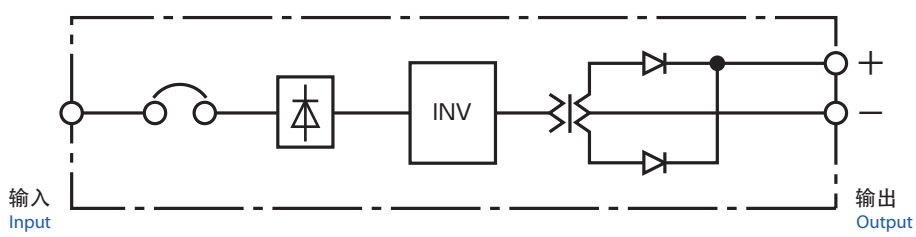
4. 外部控制功能（标准配置）
外部信号可以控制ON/OFF，CV/CC切换，输出调整功能
Availability of control by external signals as standard
ON/OFF, CV/CC change, and output conditioning are possible by an external signal.

5. 远程控制器（选项）
Remote controller pendant (Option)

用途 Application

- ●PCB电镀 **●Printed-wiring board plating**
- ●电子部品电极电镀 **●Electronic parts electrode plating**
- ●半导体晶圆表面处理 **●Semiconductor wafer surface treatment**
- ●贵金属装饰性电镀 **●Noble metal decorative plating**

电路结构 Circuit configuration



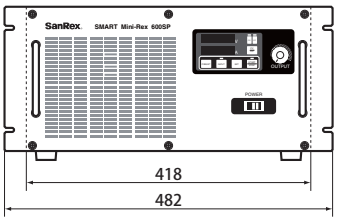
Rack mount type power supply for metal surface processing
框架式金属表面处理用电源

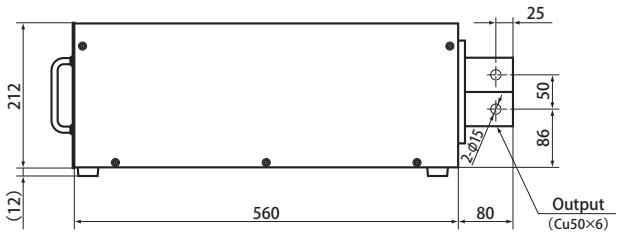
规格 Specification

型 号 Type			SMR-6003SP	SMR-6006SP	SMR-6010SP	SMR-6012SP	SMR-6015SP
电气规格 Electrical specification	输入电压	Input voltage	三相 3-phase AC200/220V ±10% or AC380/400/460V ±10% 50/60Hz				
	输入容量	Capacity	3.2kVA	6.2kVA	10.5kVA	12.5kVA	15.7kVA
	额定输出电压	Rated output voltage	6V				
	额定输出电流	Rated output current	300A	600A	1000A	1200A	1500A
	额定输出电力	Rated output power	1.8kW	3.6kW	6.0kW	7.2kW	9.0kW
	输出调整范围	Range of output Conditioning	额定电压10%~100%（额定电压运转时） At 10 to 100 % of rated voltages (for constant voltage operation)				
			额定电流10%~100%（额定电流运转时） At 10 to 100 % of rated currents (for constant current)				
	额定范围	Ratings	Ao种类 100%连续额定范围 Ao kind100 % continuous rating (Confirming Japanese standard.)				
	输出调整方式	Output conditioning method	开关式 Switching mode				
	定电压精度	Constant voltage control accuracy	额定输出电压1.0%以内 Within 1.0% of rated output voltage				
	定电流精度	Constant current control accuracy	额定输出电流1.0%以内 Within 1.0% of rated output current				
	电流脉动率	Current ripple factor	3%PP以内（商用成分） 3% P-P or less (Commercial component)				
绝缘电阻		Insulation resistance	5MΩ以上（DC 500V兆时） 5MΩ or more (By DC 500V megger)				
绝缘耐电压		Withstand voltage	主回路1次~2次间 2000V/1分钟 Main circuit primary side - secondary side 200V/1 min.				
			主回路1次~接地间 2000V/1分钟 Main circuit primary side - ground 2000V/1 min.				
			主回路2次~接地间 500V/1分钟 Main circuit secondary side - ground 500V/1 min.				
额定·冷却方式		Rated, Cooling	连续·强制风冷 Continuous/ Forced air cooling				
使用条件 Working condition	设置场所	Location	屋内（无风雨阳光直接照射场所） Indoors (place not exposed to wind and rain and direct sunshine)				
	周围温度	Ambient temperature	0~40℃				
	相对湿度	Relative humidity	30~85%				
	海拔高度	Altitude	1000m以下 1000m or below				
质 量		Weight	30kg			65kg	

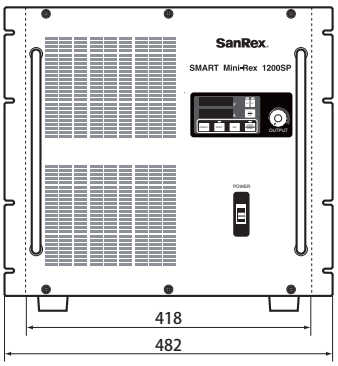
外形尺寸图 (mm) External dimension diagram

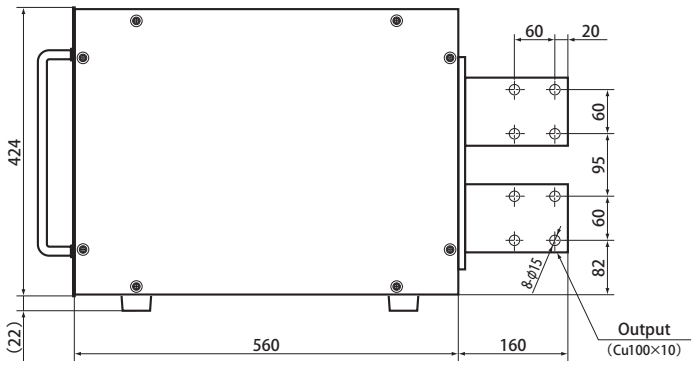
(A)
SMR300SP
SMR600SP
SMR750SP





(B)
SMR1000SP
SMR1200SP
SMR1500SP





型号识别 How to read the model

SMR-6003SP

额定输出电压
Rated output voltage
6 ···· 6V

额定输出电流
Rated output current
003 ···· 300A
006 ···· 600A
010 ····1000A
012 ····1200A
015 ····1500A

SUPER MINI-REX MED series

特点 Features

1. 低纹波
额定输出时的电流纹波低于10%
Low ripple
Current ripple of 10% or less during rated output.

2. 提高操作性
操作部集中在正面板
Enhanced operability
Operating section centralized on the front panel.

3. 软启动功能
6~60秒 软启动功能
Soft start function
Soft starting with a period of 6 to 60 seconds available.

4. 定电压 / 定电流控制
定电压、定电流控制可以设定
Constant voltage and constant current control
Constant voltage and constant current contorol selectable.

5. 对应各种控制的输入与输出
与电镀槽联动并且遥控功能
连接与外部电脑
Various control input and output
Operation with electrodeposition tank.
Remote control function.
Connection to external computer.

规格 Specification

型　号 Type	MED2-3520	
输入电压 Input voltage	三相 3-phase 50Hz 200V 60Hz 200V/220V 三相 3-phase 50Hz 400V 60Hz 400V/440V	
输出范围 Output range	电压 1/10～额定电压 电流 1/10～额定电流	Voltage: 1/10 - rated voltage, Current: 1/10 - rated current
额定·冷却 Rated, Cooling	连续强制空气冷却	Continuous / Forced air cooling
输出控制方式 Output control method	三相全波整流 可控硅相位控制	3Phase full wave rectification Thyristor based phase control
控制特性 Control characteristic	转换定电压-定电流控制 软启动功能 6～60秒　任意设定	CV-CC control switch Soft start time 6-60 sec. setting available
纹波 Ripple	RMS10%（额定输出时） （选项 RMS2% 1/2输出时）	RMS 10% at rating output (option : RMS 2% at half load)
运转方法 Operating method	手动（面版上的按钮）或是连动（外部信号）	Manual (panel setting) or auto (external signal)

输入电压 Input capacitance

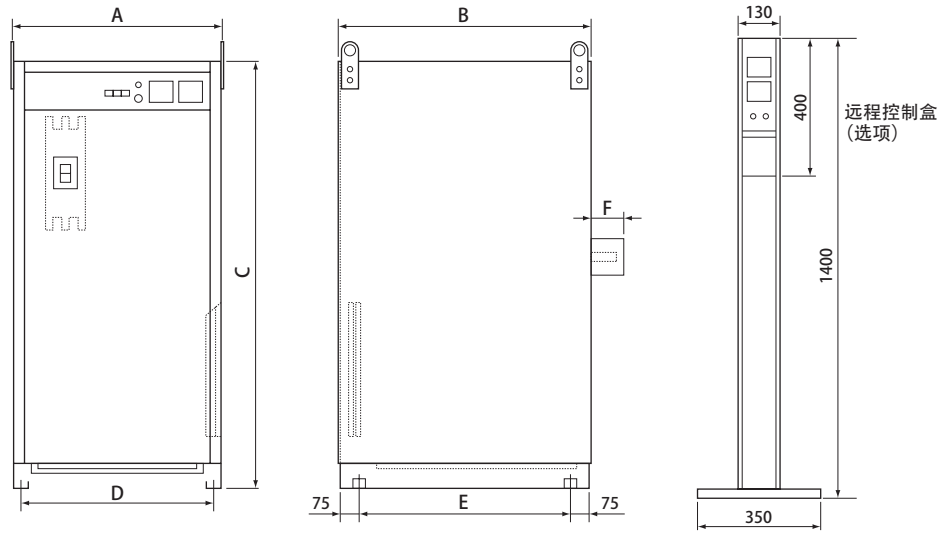
输出电压(V) Output voltage (V) ＼ 输出电流(A) Output current (A)		30	50	100	150	200	250	300	350	400	500
输入容量 (kVA) Input capacitance (kVA)	200	7.3	13	26	45	50	60	75	85	99	129
	250	9.6	16	32	53	62	76	93	105	123	152
	300	13	19	36	56	73	90	110	127	142	182
	350	15	22	44	63	86	105	127	150	170	218
	400	17	25	47	71	94	124	141	170	194	236

质量 (kg) Weight

输出电压(V) Output voltage (V) ＼ 输出电流(A) Output current (A)	30	50	100	150	200	250	300	350	400	500
200	250	250	300	460	500	620	680	710	760	820
250	260	260	300	490	530	650	700	740	800	870
300	270	270	310	520	560	680	730	770	840	920
350	300	300	340	550	590	710	760	800	880	970
400	350	350	370	580	620	740	800	840	920	1020

Power supply units for electrodeposition coating
电镀涂饰用可控硅整流器

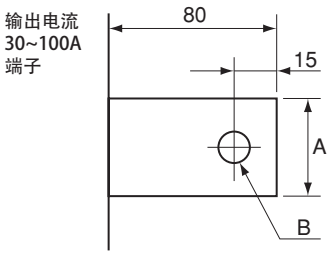
外形尺寸图 (mm) External dimension diagram



型号 Type	容量 Capacity	尺寸(mm) Outline					
		A	B	C	D	E	F
MED-30 03	300V- 30A	460	700	1100	390	540	110
MED-30 05	300V- 50A	460	700	1100	390	540	110
MED-30 10	300V- 100A	460	700	1100	390	540	110
MED-30 15	300V- 150A	600	800	1350	530	640	110
MED-30 20	300V- 200A	600	800	1350	530	640	110
MED-30 25	300V- 250A	650	950	1450	550	790	110
MED-30 30	300V- 300A	650	950	1450	550	790	110
MED-30 35	300V- 350A	650	950	1450	550	790	110
MED-30 40	300V- 400A	700	1000	1550	630	840	110
MED-30 50	300V- 500A	700	1000	1550	630	840	110

当输出为200V的时候是20, 当输出为250V的时候是25, 当输出为350V的时候是35(在同样的外形尺寸, 也可以制造输出电压不同的机械)
When the output voltage is 200V, it becomes 35 for 20, 250V and 25, 350V. (Even as for a different model of the output voltage, externals size is same.)

输出端子图 (mm) Output terminal



输出电流(A) Output current (A)	A	B	厚度 Thickness
150~250	25	ϕ9	t = 6
300~350	30	ϕ9	t = 6
400~500	50	ϕ15	t = 6

型号识别 How to read the model

MED2-3520

- MED series
- 输入电压 Input voltage: 2 ····· 200/220V; 4 ····· 400/440V
- 额定输出电压 Rated output voltage: 20 ···· 200V; 25 ···· 250V; 30 ···· 300V; 35 ···· 350V; 40 ···· 400V
- 额定输出电流 Rated output current: 03 ···· 30A; 05 ···· 50A; 10 ···· 100A; 15 ···· 150A; 20 ···· 200A; 25 ···· 250A; 30 ···· 300A; 35 ···· 350A; 40 ···· 400A; 50 ···· 500A

DIGITAL-7 智能安培小时计

特点 Features

1. 简单易懂的数字显示

数字显示设定值，测量值。

Conspicuous digital display

All set values and measurement values displayed digitally.

2. 采用触摸屏面板，实现LED数字显示

通过触摸屏，可随意改变模式，而且设定模式可以用LED显示。

Touch panel LED display

Operability is outstanding due to the adoption of a touch panel method. Further, modes can be switched with a single touch, and the set mode is displayed using LED.

3. 实现多功能化（1台具有4种功能）

搭载监视表面处理用直流电源时所需的4位预设积算电流计，8位总积算电流计，电流计，电压计等4种功能。

4 roles per device multifunctionality

There are four built-in functions required to monitor the AC power supply for display management: 4-digit preset integral ammeter, 8-digit total integral ammeter, an ammeter, and a voltmeter.

4. 记忆功能

积算功能根据EEPROM（非易失性存储器）附带记忆功能。
测量值可保存到输入复位信号为止。

Memory function

An integral function has memory function using EEPROM (Electrically Erasable Programmable Read-Only Memory). The measured values are stored until the reset signal is input.

5. 丰富的备选功能

① 记录继电器功能　② 输出计数脉冲　③ 通信功能

Full range of optional functions

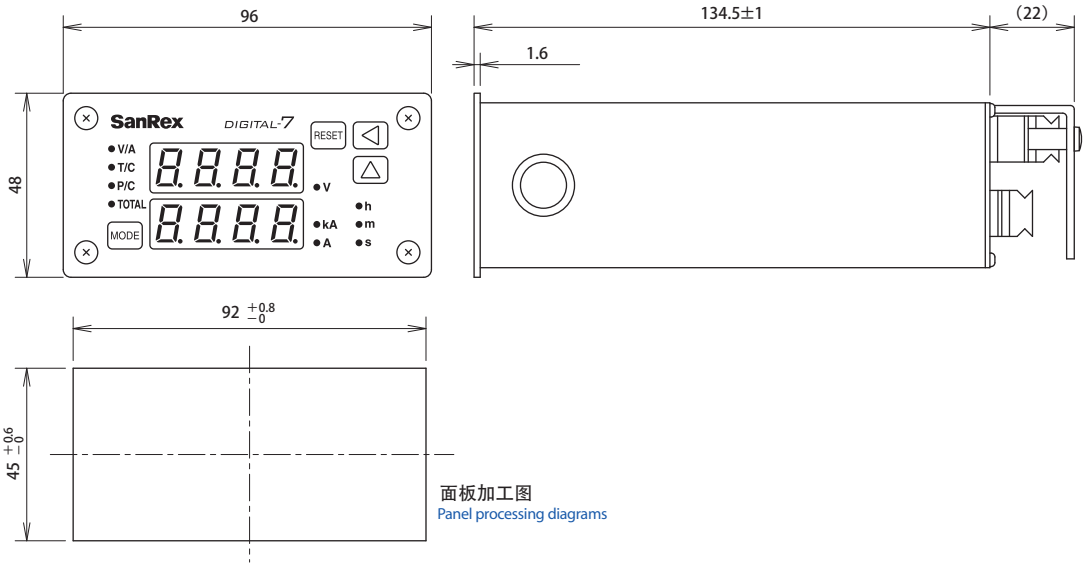
(1) Meter relay function　(2) Count pulse outputs　(3) Communications function

DC integrating AH meter for plating management
管理电镀用 智能安培小时计

规格 Specification

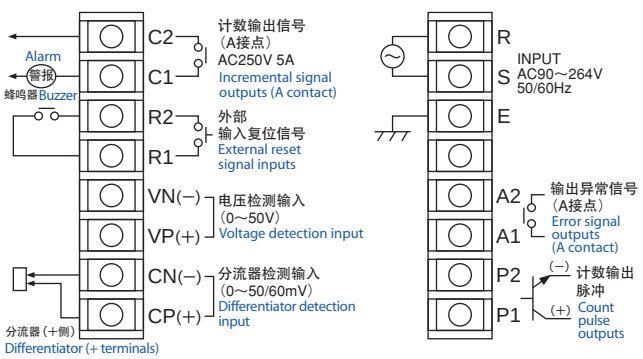
型　号 Type	SHA-7 (DIGITAL-7)
电源电压 Power supply voltage	AC90～264V 10VA 50/60Hz
分流器检测输入 Differentiator detection input	DC0～50mV / DC0～60mV
电压检测输入 Voltage detection input	DC0～50V
计数输出信号 Incremental signal output	AC250V 5A DC30V 5A（电阻负载） AC250V 5A DC30V 5A (Resistance load) AC250V 2A DC30V 2A（感应负载 COSφ=0.4） AC250V 2A DC30V 2A (Induction load COSφ=0.4)
精　度 Accuracy	显示电流 ±0.5% F.S. Current display ±0.5% F.S. 显示电压，积算电流 ±1.0% F.S. Voltage display and integrated current ±1.0% F.S.
显示功能 Display function	电压/电流，计数/预设，总计数的显示模式切换式（按键式切换开关） Voltage/current, count/preset, and total display mode switching (using keyboard switches)
显示位数 No. of digits displayed	显示电压/电流: 4 digit、显示预设: 4 digit、显示总计数: 8 digit Voltage/current display: 4 digit, Preset counter display: 4 digit, Total counter display: 8 digit
复位功能 Reset function	预设计数：根据按键开关及外部信号 Preset counter: Depending on keyboard switches and external signals 总计数：根据按键开关 Total counter: Depending on keyboard switches
额定电流范围 Rated current range	0.010A～9999kA
积算电流单位 Integrated current units	AS / AM / AH
积算电流范围 Integrated current range	×1 / ×10
工作温度 Operating temperature	0～50℃
工作湿度 Operating humidity	90%RH ≧
绝缘电阻 Isolation resistance	20MΩ ≦（by DC500V megger）
质　量 Weight	540g

外形尺寸图 (mm) External dimension diagram



面板加工图
Panel processing diagrams

接线端子 Connection terminals



SanRex 生产基地 Manufacturing Facilities

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Osaka Plant (Small & Middle power equipment)

●滋贺工厂 (大型机器・设备)
Shiga Plant (Large power equipment)

●冈山工厂 (半导体)
Okayama Plant (Power semiconductors)

●佛山市顺德区三社电机有限公司(中国)
FOSHAN CITY SHUNDE SANREX LIMITED (China)

注意 Caution

为了正确，安全使用，使用前请阅读“使用说明书”。请不要放置在水，湿气，气化液体，尘埃，油烟等多的地方。将成为引发火灾，触电等的原因。
Read and understand the entire Operating Manual and your employer's safety practices before installing, or using the equipment. Do not install the equipment in an area where water, high humid, steam, dust or oil are located. It may cause damage to the equipment or result in a fire or electrical shock.

●有寿命的部件 (风机，保险丝) 等，更换时需要费用，敬请周知。
关于附属品请慎重保管。
●将此说明书使用于本商品说明书记载事项以外的用途时，请另联系。
●为了性能的提高，本说明书的内容可能有无预告变更。

●Please note that the parts such as fan or fuse needed to be replaced are chargeable when replacing. Also, keep accessory parts in a safe place.
●Please contact us if the equipment is used for any other applications not specified in this brochure.
●Specifications are subject to change without any notice.

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●功率半导体 ●新能源相关机器 (太阳光，风力，热电联产) ●环境关连机器 (等离子灰溶解，臭氧发生，洗净机) ●IT关联机器 (通信用电源・UPS) ●产业用机器 (表面处理用・电力调整器・焊接机・光源)
●Power Semiconductors ●Clean & Save energy (Solar power, Wind power, Co-generation) ●Environment (Plasma ash melting, Ozone generation, Cleaning Systems) ●IT-related systems (Communication power supply, UPS)
●Industrial systems (Surface treatment, Electric Power Controller, Welding machine, Lighting power supply)

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