

Output Frequency 50/60Hz Type

SYN series

SNY series is static type frequency converters.

It supplies AC power of highly stabilized constant voltage and constant frequency to the load.

IGBT (Insulated Gate Bipolar Transistor) and PWM high frequency switching which inverter part has do momentary waveform control so that it always outputs sine wave with so little distortion. It is a power-supply device for supporting a wide range of load such as electronic equipment, computers and rotating machines with increasing density.

SYN系列是静态型的频率变换器，可以向负载提供具有非常稳定的固定电压和定频率的交流功率。逆变器部分采用 IGBT (Insulated Gate Bipolar Transistor)，利用 PWM 高频开关，进行瞬时波形控制，从而保证输出电压波形一直保持为失真度小的正弦波。

本电源装置利用率非常高，其所具备的高性能，能够灵活地满足密度越来越高的电子器材以及计算机及旋转机等各种各样的负载的要求。



Control Method (AF type) 控制方法 (AF型)

PWM rectifier method utilizing the latest IGBT element is used in the input rectifier. PWM rectifier consisting of usual diode rectifier and switching element (IGBT) turns on and off the switching element with high frequency wave so that AC side current becomes sine wave with power factor 1.0.

PWM rectifier generates little harmonic and reactive current.

The inverter part is also high-frequency wave PWM utilizing the latest IGBT element and generates sine wave with extremely small filter.

In addition, it makes instantaneous voltage value to be sine wave by momentary wave control method.

So, output voltage becomes clean sine wave form, even if a load (nonlinear loading) contains a lot of distorted wave currents generated from PCs.

输入的整流器采用的是 PWM 整流方式，这种 PWM 整流方式使用了最新的 IGBT 元件。PWM 整流器对常用二极管整流器和开关元件 (IGBT) 进行组合，利用高频对开关元件进行开闭控制，以使交流端电流为功率因数 1.0 的正弦波。PWM 整流器具有高次谐波电流少，几乎没有无效功率的特点。逆变器部分也是同样使用了最新 IGBT 元件的高频 PWM，采用极小型的滤波器输出正弦波。而且输出电压的控制采用瞬时波形控制方式，从而可以使电压的瞬时值为正弦波。因此，即使像计算机那样含有很多谐波电流的负载 (非线性负载)，输出电压也能变成整齐的正弦波形。

Application 用途

- Examination, Inspection
检测, 监测
- Laboratory
研究室, 实验室电源
- Products line for quality control etc
生产线, 产品质量检测线 等

- Please tell us about a capacity selection for the load with large rush current (motor etc.).
对于起动电流较大的负载 (电机等)，其容量的选定请向我们咨询。

Note: External size/weight may be changed.
注) 外形尺寸和重量根据情况，会有所变更。

Feature 特长

- Output frequency selection mode 50Hz·60Hz(Constant)/45 ~ 65Hz (Variable)
输出频率选择模式 50Hz·60Hz (固定)/45 ~ 65Hz (可调)
- Momentary waveform control (to nonlinear loading sine wave)
瞬时波形控制 (对非线性负载正弦波)
- Insulation type
输入-输出之间绝缘
- Low noise, Power-saving
低噪音, 节能
- Small and lightweight type
小型轻量
- 100V/200V switchable (Input single phase 2 ~ 20KVA)
100V/200V 可调 (单相 2 ~ 20KVA)
- Voltage accuracy $\pm 3\%$ or less within 20% of the three-phase circuit output load imbalance rate (at the detection point) (Ex: U phase 100%, V phase 80%, W phase 90%)
三相输出型负载不平衡率在 20% 以内 (例如: U 相 100%, V 相 80%, W 相 90%) 时, 电压精度在 $\pm 3\%$ 以下 (在检测点)

Kind of main voltage 主要电压种类

Single phase 2 wire	单相二线式	100V	110V	115V	120V	220V	230V	240V
Single phase 3 wire	单相三线式	200/100V	210/105V	220/110V	230/115V	240/120V	400/200V	440/220V
Three phase 3 wire	三相三线式	200V	210V	220V	380V	400V	415V	440V
Three phase 4 wire	三相四线式	115/200V	120/208V	127/220V	220/380V	230/400V	240/415V	277/480V

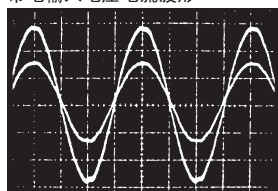
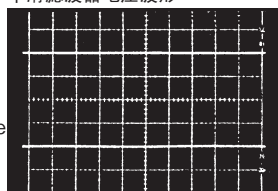
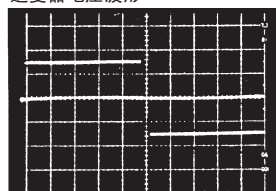
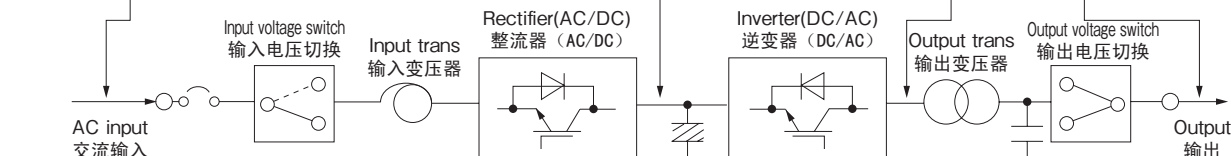
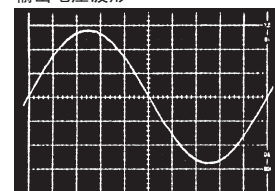
50/60Hz 输出型

SYN系列

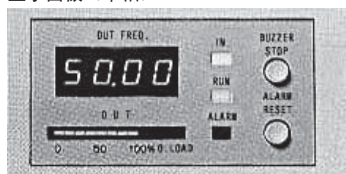


Block diagram of waveform (AF type) 电路结构波形 (AF型)

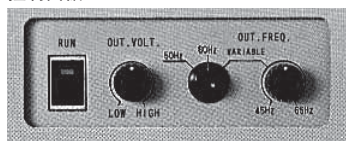
Circuitry 电路构成

Waveform of input voltage and input current
市电输入电压电流波形Input voltage
输入电压
Output voltage
输出电压Waveform of smooth filtered voltage
平滑滤波器电压波形Waveform of inverter voltage
逆变器电压波形Waveform of output voltage
输出电压波形

※ Only AF type has input and output voltage selector.
输入电压切换和输出电压切换只装备 AF 类型 (单相 2 ~ 20KVA)。

Indication panel (Single phase)
显示面板 (单相)

- | | |
|------------------------------------|--|
| Output frequency meter
输出频率表 | Displays output frequency in four digits.
输出频率用四位数字表示。 |
| Overload indicator light
超载显示灯 | Lights up on output overcurrent, and the device transfers to constant current operation.
输出过电流时, 灯点亮, 设备以恒定电流工作。 |
| Input indicator light
输入显示灯 | Lights up when the device switch is ON.
装置的输入开关开启 [ON] 时输入显示灯点亮。 |
| Operation indicator light
运行显示灯 | Lights up when the inverter is in operation.
逆变器运行时, 灯点亮。 |
| Warning light
告警显示灯 | Lights up when failure (and output overcurrent) occurs.
装置异常时, 告警显示灯点亮 (输出过电流时灯也点亮)。 |
| Buzzer stop switch
告警器停止开关 | Stops buzzer when failure occurs.
它是装置异常时发出告报的开关。 |
| Reset switch
复位开关 | Inverter may stop operating temporarily, when the device malfunctions or the load current is abnormal.
In that case, press the reset button after the problem is resolved to restart the operation.
装置异常时或者负载电流异常时, 逆变器有时会暂停运行。
这时, 异常排除后, 按下复位按钮的话, 则可以重启运行。 |

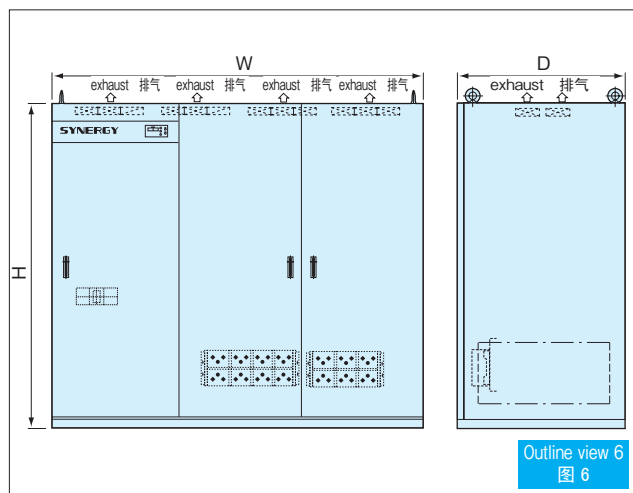
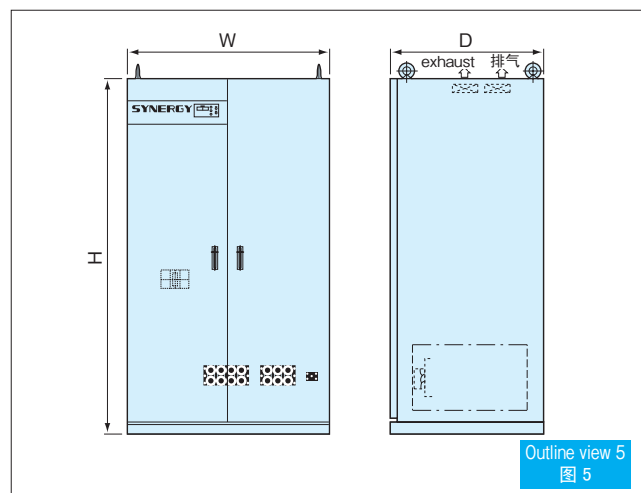
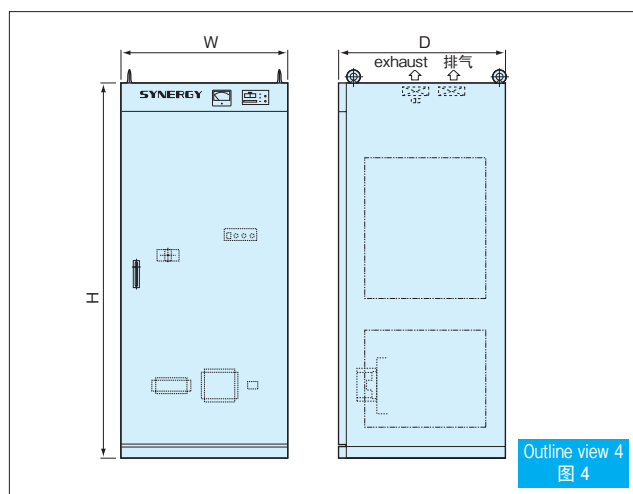
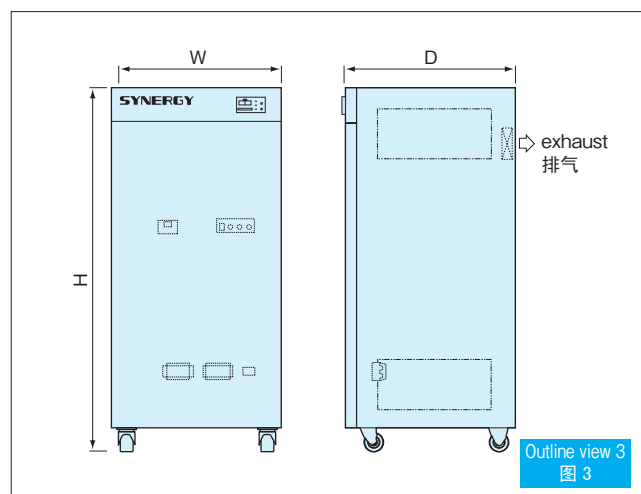
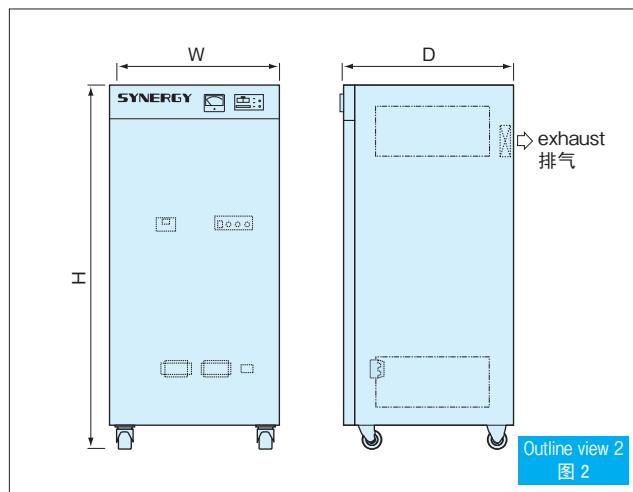
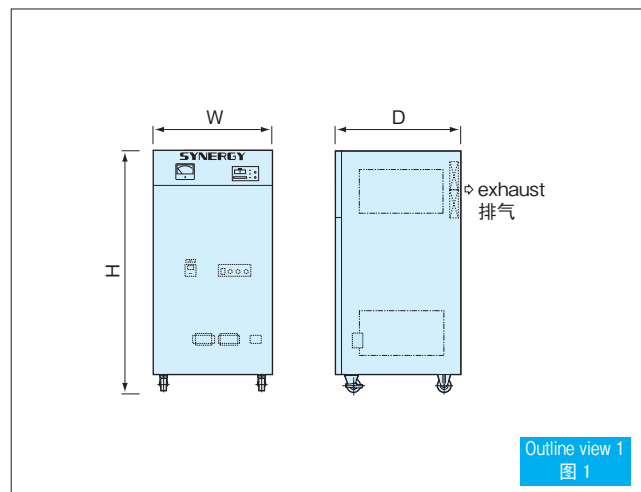
Operation panel
控制面板

- | | |
|---|--|
| Inverter operation switch
逆变器运行开关 | Turns on and off the inverter.
逆变器的运行和停止开关。 |
| Output voltage regulator
输出电压调节器 | Adjusts output voltage of the device in the range of $\pm 5\%$.
(Constant output voltage type/input rating)
可以在 $\pm 5\%$ 的范围内调节设备的输出电压。
(输出电压固定型 / 输入额定型) |
| Output frequency selector switch
输出频率切换器 | Output frequency selector switch of power supply. Select fixed or variable range.
它是装置的输出频率切换器。请选择固定波段或者可调波段。 |
| Output frequency regulator
输出频率调节器 | Changes frequency when the output frequency switcher is within variable range (45-65Hz).
输出频率切换器设置为可调波段 (45 ~ 65Hz) 时, 可以用该调节器改变频率。 |

Output Frequency 50/60Hz Type

SYN series

Outline view 外观图



Note: Three-phase type comes with a voltmeter/ampere meter as standard equipment (Installed inside the door).

Single-phase output type has a voltmeter as standard equipment (Installed on panel side).

注) 三相输出型标准配置电压表和电流表 (安装在门内)。单相输出型标准配置电压表 (安装在面板上)

50/60Hz 输出型

SYN系列

Specifications 规格

Insulation Type 绝缘型

Model 型号		SYN													
		2AFX	3AFX	5AFX	7.5AFX	10AFX	15AFX	20AFX	5KHX	7.5KHX	10KHX	15KHX	20KHX	30KHX	50KHX
Output 输出	Capacity(KVA) 容量(KVA)	2	3	5	7.5	10	15	20	5	7.5	10	15	20	30	50
	Phase 相位	Single Phase 2 Wire 单相二线													
	Voltage 电压	100/200V or 110/220V or 115/230 or 120/240V or another 100V/200 V或110/220V或115/230V或120/240V或其它													
	Voltage Accuracy 电压精度	less than ± 1.0% 小于 ± 1.0%													
	Transient Response 瞬态响应	less than ± 5.0% 小于 ± 5.0%													
	Response Time 响应时间	less than 1mSec. 小于1毫秒													
	Adjust Range 调整范围	± 5.0%													
	Frequency 频率	50/60 / 45 ~ 65Hz													
	Frequency Accuracy 频率精度	less than ± 0.01Hz/ ± 0.1Hz 低于 ± 0.01Hz/ ± 0.1Hz													
	Wave Distortion 波形失真	less than 2%(lenear load) 5%(Rectifier load) 低于2%（线性负载）5%（整流器负载）													
	Over Current Protection 过电流保护	droop over 110% 降低超过110%													
	Crest Factor 峰值因数	300%													
	Power Factor 功率因数	1 ~ 0.7													
Input 输入	Capacity(KVA) 容量(KVA)	2.2	3.3	5.5	8.3	11	16.5	22	5.5	8.3	11	16.5	22	33	55
	Phase 相位	Single Phase 2 Wire 单相二线							Three Phase 3 Wire 三相三线						
	Voltage 电压	100/200V or 110/220V or 115/230 or 120/240V or another 100/200 V或110/220V或115/230V或120/240V或其它							200 or 380 or 400 or 415V or another 200V或380V或400V或415V或其它						
	Voltage Range 电压范围	± 10%													
	Frequency 频率	47 ~ 63Hz													

Model 型号	SYN													
	5SHX	7.5SHX	10SHX	15SHX	20SHX	30SHX	50SHX	75SHX	100SHX	150SHX	200SHX	250SHX	300SHX	500SHX
Capacity(KVA) 容量(KVA)	5	7.5	10	15	20	30	50	75	100	150	200	250	300	500
Phase 相位	Three Phase 3 Wire 三相三线													
Voltage 电压	200 or 380 or 400 or 415V or another 200 V或380V或400V或415V或其它													
Voltage Accuracy 电压精度	less than $\pm 1.0\%$ 小于 $\pm 1.0\%$													
Transient Response 瞬态响应	less than $\pm 5.0\%$ 小于 $\pm 5.0\%$													
Response Time 响应时间	less than 1mSec. 小于1毫秒													
Adjust Range 调整范围	$\pm 5.0\%$													
Frequency 频率	50/60 / 45 ~ 65Hz													
Frequency Accuracy 频率精度	less than $\pm 0.01\text{Hz}$ / $\pm 0.1\text{Hz}$ 低于 $\pm 0.01\text{Hz}$ / $\pm 0.1\text{Hz}$													
Wave Distortion 波形失真	less than 2%(linear load) 5%(Rectifier load) 低于2% (线性负载) 5% (整流器负载)													
Over Current Protection 过电流保护	droop over 110% 降低超过110%													
Crest Factor 峰值因数	300%													
Power Factor 功率因数	1 ~ 0.7													
Capacity(KVA) 容量(KVA)	5.5	8.3	11	16.5	22	33	55	83	110	165	220	275	330	550
Phase 相位	Three Phase 3 Wire 三相三线													
Voltage 电压	200 or 380 or 400 or 415V or another 200V或380V或400V或415V或其它													
Voltage Range 电压范围	$\pm 10\%$													
Frequency 频率	47 ~ 63Hz													