

# INSTRUCTION SHEET/取扱説明書

## 使用说明书/Betriebsanleitung

Switching Power Supply PS5R-VA  
機器組込み用スイッチングパワーサプライ PS5R-VA  
切換式電源 PS5R-VA  
Schalt Netzgerät PS5R-VA



English

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

**SAFETY NOTE**

1. SAFETY NOTE IN CLASS I, DIV. 2, GROUPS A, B, C, AND D HAZARDOUS LOCATIONS, OR NON HAZARDOUS LOCATIONS ONLY.

2. WARNING - EXPLOSION HAZARD - SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2.

AVERTISSEMENT : RISQUE D'EXPLOSION. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LES EMBLEMENTS DE LA CLASSE I, DIVISION 2.

3. WARNING - EXPOSURE TO SOME CHEMICALS MAY DEGRADE THE SEALING PROPERTIES OF MATERIALS USED IN THE RELAYS CONTAINED IN THIS DEVICE.

AVERTISSEMENT : EXPOSITION DES RELÉS UTILISÉS DANS CE DISPOSITIF À DES PRODUITS CHIMIQUES RISQUE D'AFFECTER LES PROPRIÉTÉS D'ÉTANCHÉITÉ.

4. WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON HAZARDOUS.

AVERTISSEMENT : RISQUE D'EXPLOSION. AVANT DE DÉCONNECTER L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DÉSIGNÉ NON DANGEREUX.

In this operation instruction sheet, safety precautions are categorized in order of importance to Warning and Caution : The PS5R-VA switching power supplies are designed for installation in a cabinet. This product cannot be used outside of equipment. Embed this product inside an appropriate enclosure before using the product.

**△ WARNING**

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

- Do not use the switching power supply on control equipment in aircraft, trains, and atomic equipment where malfunction of the switching power supply may cause severe personal injury or threaten human life. These switching power supplies are designed for use on general electronic equipment such as communication equipment, instrumentation equipment, and industrial control equipment.

- Make sure that the operating conditions satisfy the values described in the catalog. Confirm the specification values before designing the equipment to use the switching power supply and before supplying power. Contact IDEC if you have any question.

- Do not modify or repair the switching power supply. Modification or repairing of the switching power supply by user may cause electrical shocks, damage, fire, malfunction, and other heavy accidents.

- Do not install the switching power supply where a human body may come into contact while power is supplied to the switching power supply. Do not touch the switching power supply during operation immediately after turning it on because some parts are heated and at a high voltage, causing burns or electrical shock. The PS5R-VA switching power supplies are designed for installation in a cabinet.

- Do not connect the output terminals or output lead wires together. Fire or damage may result.

- Include a protection in the equipment using the switching power supply in consideration of malfunction or damage of the load in case the switching power supply should fail. If the switching power supply should fail, a very high voltage drop may occur at the output terminals.

- Turn power off before wiring the switching power supply. Make sure of correct wiring. Incorrect wiring may cause electrical shocks or damage.

- For IT power distribution systems, make sure to install an external fuse into (N) AC input terminal for protect the N line.

**△ CAUTION**

Caution notices are used where inattention might cause personal injury or damage to equipment.

- Make sure of the correct input voltage. Incorrect input voltage may cause blown fuses, fuming, or fire. Make sure of correct polarity of input and output terminals before supplying power to the switching power supply.

- For IT power distribution systems, make sure to install appropriate equipments for earth fault detection.

- Mounting the switching power supply, make sure that the body has been securely fixed.

- Do not touch any part inside the switching power supply. Prevent foreign objects from entering into the housing of the switching power supply. If the internal parts are touched by hand or foreign objects such as a paper clip or screw entering into the housing, accidents or damage may occur.

- Observe the temperature derating. The operating temperature is the temperature around the switching power supply. Use the switching power supply within the temperature derating curve. Otherwise, the internal temperature will rise and damage may be caused.

- For DC input, make sure to install an external fuse.

- Do not turn the output voltage adjustment beyond the limits. Otherwise, the switching power supply may be deteriorated and damage may be caused.

- When damage or malfunction should occur during operation, immediately turn power off and stop the switching power supply. Contact IDEC.

- Do not use or store the switching power supply in environments subjected to a large amount of vibrations or shocks. Otherwise, damage may be caused.

- Do not install the switching power supply in environments exposed to direct sunlight, iron pieces, oil splashes, chemicals, and hydrogen sulfide. Do not use the switching power supply in humid places such as basements or greenhouses or in low-temperature places such as freezers or in front of cooler outlet.

**1 Safety Standard Conditions**

Applicable standards:

UL508 Listing, ANSI/ISA 12.12.01, UL1310 Class 2, CSA C22.2 No.107.1, EN60950-1, EN50178

EMC: EN61204-3 Class B

**2 Type No. Guide**

PS5R-VA□

□ Output Voltage Code: 05: 5V, 12: 12V, 24: 24V

**3 Conditions**

Note: Refer to "6. Output Derating" for authorized operating temperature by each standard.

Operating temperature: -25 to +75°C  
(without freezing, see output derating □ ①②)

Storage temperature: -25 to +75°C (without freezing)

Operating/storage humidity: 20 to 90% RH (without condensation)

Altitude: Up to 200m above sea level

Pollution degree: 2

**4 Rating**

Use the switching power supply with the output wattage within the values shown below.

Input Voltage: 100-240VAC, 50/60Hz

Input Current: 0.2-0.12A (PS5R-VA05)

0.18-0.10A (PS5R-VA12, -VA24)

Output	Type No.	Output Voltage V DC	Output Current Max. A	Output Wattage Max. W
PS5R-VA05	4.5-5.5	1.5	7.5	
PS5R-VA12	10.8-13.2	0.6	7.2	
PS5R-VA24	21.6-26.4	0.3	7.2	

Leakage current: 1.0mA max.

Oversupply category: II

Output :

Type No. Output Voltage V DC Output Current Max. A Output Wattage Max. W

PS5R-VA05 4.5-5.5 1.5 7.5

PS5R-VA12 10.8-13.2 0.6 7.2

PS5R-VA24 21.6-26.4 0.3 7.2

漏泄电流: 1.0mA max.

漏电电压类别: II

Overvoltage category: II

Output :

Type No. Output Voltage V DC Output Current Max. A Output Wattage Max. W

PS5R-VA05 4.5-5.5 1.5 7.5

PS5R-VA12 10.8-13.2 0.6 7.2

PS5R-VA24 21.6-26.4 0.3 7.2

漏泄电流: 1.0mA max.

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Output :

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PS5R-VA05 4.5-5.5 1.5 7.5

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漏泄电流: 1.0mA max.

漏电电压类别: II

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漏泄电流: 1.0mA max.

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漏泄电流: 1.0mA max.

漏电电压类别: II

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漏泄电流: 1.0mA max.

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漏泄电流: 1.0mA max.

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漏泄电流: 1.0mA max.

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PS5R-VA24 21.6-26.4 0.3 7.2

漏泄电流: 1.0mA max.

漏电电压类别: II

Output :

Type No. Output Voltage V DC Output Current Max. A Output Wattage Max. W

PS5R-VA05 4.5-5.5 1.5 7.5

**5 Allowable Input Range**

Use the switching power supply within the input voltage range shown below. (Not compliant with safety standards) For DC input, make sure to install an external fuse. 85 to 264VAC/100 to 370VDC (At 100 to 105VDC, the rated power is 80% maximum.)

**6 Output Derating**

Note: In order to comply with UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178 standards, the ambient operating temperature is as below.

Mounting	A	B	C	Mounting	D	Mounting	E	Mounting	F
65	60	60	60	65	60	60	65	60	

**7 Mounting**

<Mounting on 35mm-wide DIN Rail>

- (1) Fasten the DIN rail to a panel firmly.
- (2) Put the groove(①) of the switching power supply on the DIN rail, with the input terminal side up, press the switching power supply to the panel(②). Make sure that the switching power supply is fixed to the DIN rail securely.
- (3) Use BN6 mounting clips on both the sides of the switching power supply to prevent from moving sideways.

<Removing from DIN Rail>

- Insert a flat screw driver into the slot in the clamp. Pull the clamp out until the clamp clicks(③), and turn the switching power supply bottom out(④).

**8 Terminal Marking and Description**

- ①(L) AC Input Terminal
- ②(N) AC Input Terminal
- ③(G) Ground Terminal (Protective earthing terminal)
- ④(-V) DC Output Terminal
- ⑤(+V) DC Output Terminal
- ⑥(VR.ADJ) Output Voltage Adjustment
- ⑦(ON) (DC ON) Operation Indicator

**9 Power Supply Installation**

- ① Make sure of sufficient convection in consideration of heat radiation. Do not block the opening of the switching power supply.
- ② Keep at least 10mm clearance around the switching power supply, except for the opening.
- ③ When the derating is in question, provide forced air-cooling.
- ④ Connect ground terminal to a proper ground completely.
- ⑤ Use minimum 80°C wire, copper wire only. Recommended wire type: AWG18 to 14 (Cross section 0.75 to 2.0 mm²)
- ⑥ Terminal tightening torque 0.8 N·m.
- ⑦ <Adjusting the Output Voltage>  
The output voltage can be adjusted within  $\pm 10\%$  of the rated output voltage using the VR.ADJ.
- ⑧ <Overcurrent Protection>  
When an overcurrent flows due to an overload, the output voltage hiccups. When the load is reduced to a normal level, the normal output voltage is restored. Note that an overload or short-circuit condition continuing for an extended period of time will deteriorate or damage internal elements.

## &lt;Series Operation&gt;

- Two PS55-V switching power supplies can be connected in series. When connecting the switching power supplies in series, insert a Schottky diode in the output line of each switching power supply. (UL1310 Class 2 does not allow series connection.)

<Parallel Operation> The PS55-V cannot be connected in parallel. If connected in parallel, internal elements and loads may be damaged.

<Insulation Resistance and Dielectric Strength Tests>  
When making these tests, connect the AC input terminals together and the output + and - terminals together. Rapid application and interruption of the test voltage will generate a surge voltage, which may damage the switching power supply.

**10 Disposal**

Observe the laws and regulations set by each country concerning refuse disposal.

**5 入力可能範囲**

下記入力電圧範囲にて使用可能です（安全規格対象外）。DC 入力でご使用の場合は、必ず外部に DC 用ヒューズを取付けてご使用ください。

AC85~264V/DC100~370V  
(ただし、DC100~105V時、負荷率80%以下)

**6 出力ディレーティング**

周囲温度は電源の周囲の温度です。

注記：安全規格UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178での認証温度を下記に示します。

A取付け	B取付け	C取付け	D取付け	E取付け	F取付け
65	60	60	60	65	60

**7 取付**

△必ず制御盤や製品内部に取付けて下さい。

<35mm幅DINレールへの取付方法>

- (1)DINレールを取付板にしきりに止め固定してください。
- (2)電源をDINレールに取付する際は、下図の様に入力端子側を上にして電源部を組み立てる。矢印の方向(②)へしっかりと押込んだ後、電源がDINレールに確実に固定されていることを確認してください。
- (3)DINレール取付時の位置固定には、止め金具BNL6をご使用ください。

<取り外し方法>

- 図のようにフックにマイナスドライバを入れ、フックを矢印の方向へカチッと音がするまで引き下げる(③)と、ロック機構が解除されて、取りはずすことができます(④)。再度、DINレールに取付ける際はDIN固定フックをカチッと音がするまで押込んだ後に、取付けてください。

<拆卸方法>

如图所示, 将一字螺丝刀插入挂钩, 沿箭头方向将挂钩往下拉直至听到咔嚓一声(③), 此时锁定机构被解除, 可将DIN导轨拆下(④)。再次安装DIN导轨时, 请将DIN固定挂钩往里按, 直至听到咔嚓一声后再安装DIN导轨。

**8 端子部の名称**

- ①(L) 交流入力端子
- ②(N) 交流入力端子(接地側端子)
- ③(G) グラウンド端子(保護接地端子)
- ④(-V) 直流输出端子
- ⑤(+V) 直流输出端子
- ⑥(VR.ADJ) 出力電圧調整ボリューム
- ⑦(ON) (DC ON) 電源動作表示  
(出力ON時、LEDが点灯します。)

**9 電源の設置**

△必ず制御盤や製品内部に取付けて下さい。

- ①電源上下の開口部は閉じないでください。対流が起こる。放熱に十分ご留意ください。
- ②上下の開口部以外の電源の周りは必ず10mm以上離してください。

- ③ディレーティングを越える可能性がある場合は、強制空冷でご使用ください。
- ④グラウンド端子は確実に接続してください。
- ⑤配線には耐熱温度80°C以上のリード線をご使用ください。配線用の線材は銅線のものをご使用ください。

推奨使用線径 : AWG18~14 (断面積0.75~2.0mm²)

⑥入出力端子ねじの締めつけトルクは0.8N·mです。

⑦出力電圧の調整出力電圧はVR.ADJ(出力電圧調整ボリューム)で、定格出力電圧の10%の範囲で調整できます。

⑧過電流保護: 過負荷などで過電流状態になると出力は間欠動作となります。負荷が正常に戻りますと出力電圧も正常復帰しますが、長時間の過負荷、短絡は内部素子の劣化、破壊をまねく為に注意ください。

⑨直列電源: 電源2台の直列運転は可能ですが、出力部に各々、ショットキダイオードを挿入してください。(UL1310 Class 2適合の場合は、直列運転できません。)

⑩並列運転: 並列運転はできません。電源内部素子、及び負荷を破壊することがあります。

⑪絶縁・耐圧試験: 絶縁・耐圧試験を行なう場合は、電源の入力(A/C間)及び出力(+、-)間にそれぞれ短絡してください。また、試験電圧の急激な印加遮断はサージ電圧を発生させ、電源を破壊することがありますのでご注意ください。

**10 廃棄**

廃棄に関してはご使用になる国の方々・法律に従ってください。

**5 可输入范围**

可在以下输入电压范围内使用（安全规格范围外）。使用DC输入时, 请务必在外部安装DC用保险丝后再使用。

AC85~264V/DC100~370V  
(但是, DC电压在100~105V之间时, 负载率低于80%)

**6 输出降额**

环境温度为电源周围的温度。

附注：安全規格UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178认可的温度如下所示。

A安装	B安装	C安装	D安装	E安装	F安装
65	60	60	60	65	60

**7 安装**

<安装到35mm宽的DIN导轨上的方法>

(1)请拧紧螺钉, 将DIN导轨牢固定在安装板上。

- (2)将电源安装到DIN导轨上时, 如下图所示, 请使输入端子侧朝上嵌入电源卡槽(①), 沿着箭头方向(②)推入后, 确认电源牢固地固定在DIN导轨上。

(3)将电源位置固定到DIN导轨上时, 请使用安装架BNL6。

<拆卸方法>

如图所示, 将一字螺丝刀插入挂钩, 沿箭头方向将挂钩往下拉直至听到咔嚓一声(③), 此时锁定机构被解除, 可将DIN导轨拆下(④)。再次安装DIN导轨时, 请将DIN固定挂钩往里按, 直至听到咔嚓一声后再安装DIN导轨。

**8 端子部位の名称**

- ①(L) 交流输入端子
- ②(N) 交流输入端子
- ③(G) 地线端子 (保护接地端子)
- ④(-V) 直流输出端子
- ⑤(+V) 直流输出端子
- ⑥(VR.ADJ) 输出电压调节旋钮
- ⑦(ON) (DC ON) 电源运行显示  
(输出为ON时, LED灯点亮)

**9 电源の设置**

1. 请不要阻塞电源上下的开口部位。请充分注意散热, 使空气对流。

2. 除上下开口部位以外, 请务必在电源四周留出10mm以上的距离。

3. 如有可能超出降额, 请强制空冷后再使用。

4. 请切实连接地线端子。

5. 接线时请使用耐热温度为80°C以上的导线。接线用的线材请使用铜线。推荐导线直径: AWG18~14 (横截面0.75~2.0mm²)

6. 输入、输出端子螺钉的扭矩为0.8N·m。

7. <输出电压的调节> 可通过VR.ADJ(输出电压调节旋钮)将输出电压在额定输出电压的±10%范围内。

8. <过电流保护> 如果因超负载等情况而进入过电流状态, 造成间歇运行。负载恢复正常后输出电压也会恢复正常, 但长时间超负载和短路会造成内部元件老化, 损坏设备, 因此请注意。

9. <串联运行> 两台电源可进行串联运行。但请在输出部分分别插入肖特基二极管。(适用UL1310 Class 2标准时, 不能进行串联运行。)

10. <并联运行> 不能进行并联运行。否则可能会损坏电源内部元件及负载。

11. <绝缘和耐压试验> 行经绝缘和耐压试验时, 请分别将电源的输入(A/C之间)及输出(+、-之间)短路。

- 此外, 如果突然施加或切断试验电压, 会产生浪涌电压, 可能会损坏电源, 因此请注意。

**10 处置**

请遵守每个国家有关垃圾处理法律和法规。

**5 Zulässiger Eingang**

Die Ausgangsleistung des Schaltnetzgerätes darf die unten angeführten Werte nicht überschreiten.  
(Nicht entgegenstehen mit Sicherheitsstandards) Bei DC-Betrieb ist eine externe Eingangssicherung vorzusehen.

85 bis 264VAC / 100 bis 370VDC

(Bei 100 bis 105VDC, die Ausgangsleistung ist 80% Maximum.)

**6 Leistungsminderung**

Hinweis: Die Umgebungsbelastungstemperaturen sind gemäß UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178 wie folgt festgelegt.

Montage A	Montage B	Montage C	Montage D	Montage E	Montage F
65	60	60	60	65	60

**7 Montage**

<Montage auf einer 35 mm-DIN-Schiene>

- (1) Befestigen Sie die Kerbe (①) im Boden des Schaltnetzgeräts in die DIN-Schiene. Die Seite mit den Anschlüssen muss nach oben weisen. Drücken Sie das Schaltnetzgerät auf die Frontplatte (②).

Achten Sie darauf, dass das Schaltnetzgerät fest auf der DIN-Schiene sitzt.

- (3) Bringen Sie die BN6-Befestigungsclips auf beiden Seiten des Schaltnetzgeräts an, damit es sich nicht seitlich verschieben kann.

<Demontage>

Drücken Sie einen Schraubenzieher in den Schlitz der Klammer der Schnellbefestigung. Ziehen Sie die Klammer heraus(③), bis sie ausgestellt(④). Heben Sie nun das Gehäuse des Schaltnetzgeräts von der DIN-Schiene ab.

**8 Kennzeichnung der Anschlüsse**

- ①(L) AC Eingangsklemme

- ②(N) AC Eingangsklemme

- ③(G) Erdung (Schutzerdung)

- ④(-V) DC Ausgangsklemme

- ⑤(+V) DC Ausgangsklemme

- ⑥(VR.ADJ) Einstellung der Ausgangsspannung

- ⑦(ON) (DC ON) Betriebsanzeige

**9 Installation des Schaltnetzgerätes**

- ① Achten Sie auf eine ausreichende Luftzirkulation, damit im Betrieb entstehende Wärme abgeführt werden kann. Die Öffnung des Schaltnetzgerätes darf nicht blockiert werden.

- ② Es muss ein freier Abstand von mindestens 10 mm rund um das Schaltnetzgerät vorhanden sein.

- ③ Falls bei erhöhter Umgebungstemperatur eine Reduzierung der Ausgangsleistung nicht möglich ist, muss das Schaltnetzgerät fremdbelüftet werden.

- ④ Die Erdungsklemme ist vollständig an einen guten Erdungspunkt anzuschließen.

- ⑤ Nur Kupferdrähte verwenden, der für mindestens 80°C geeignet ist. Empfohlener Drahttyp: AWG18 bis 14 (Stärke 0.75 bis 2.0 mm²).

- ⑥ Anzugsdrehmoment der Schraubklemmen 0.8 N·m.

- ⑦ <Justierung der Ausgangsspannung> Die Ausgangsspannung kann innerhalb von ± 10 % der Nennausgangsspannung mit dem Potentiometer VR.ADJ (output voltage adjustment) eingestellt werden.

- ⑧ <Überlastschutz> Falls aufgrund einer Überlast ein zu hoher Strom fließt, geht die Ausgangsspannung in den sog. Hiccup-Modus, d.h. die Stromversorgung schaltet ab und macht periodische Startversuche, bis der Fehler beseitigt ist. Es ist zu beachten, daß eine Überlast oder ein Kurzschluß über einen längeren Zeitraum interne Bauteile beschädigen oder zerstören kann.

- ⑨ <Serienbetrieb> Zwei PS55-V Schaltnetzgeräte können in Reihe geschaltet werden. Setzen Sie in einem solchen Fall eine Schottkydiode in die Ausgangsverbindung jedes Schaltnetzgerätes. (Die Norm UL1310 Klasse 2 erlaubt keinen Serienanschluß.)

- ⑩ <Parallelbetrieb> Das PS55-V Schaltnetzgerät darf nicht parallel geschaltet werden, da interne Bauteile und die Last dadurch beschädigt werden könnten.

- ⑪ <Prüfung des Isolationswiderstandes und der Spannungsfestigkeit> Bei dieser Prüfung werden jeweils die Eingangs- und die Ausgangsklemmen verbunden. Ein zu schneller Anstieg oder Abfall der Prüfspannung erzeugt einen Spannungsimpuls, der das Schaltnetzgerät beschädigen kann.

**10 Verfüzung**

Observe the laws and regulations set by each country concerning refuse disposal.

