MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7407-0DA01-0AA0

Wide-Range PS 407 Supply. Source PDF pages: M16 pp. 2,39-40,43,54-56. Adjacent model text on shared pages is outside this product reference.

OFFICIAL SOURCE

S7-400 Automation System Module Data; 11/2016

Siemens original documentation and product reference

Original Siemens technical pages for PS 407 4A 0DA01.

AMIKON PRODUCT SUPPORT

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Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Power supply modules

3

3.1 Common characteristics of the power supply modules

Functions of the power supply modules

The power supply modules of the S7-400 supply the other modules in the rack with their operating voltages via the backplane bus. They do not provide load voltages for the signal modules.

Common characteristics of the power supply modules

The power supply modules share the following characteristics in addition to their individual specifications:

- Encapsulated design for use in racks of the S7-400 system
- Cooling via natural convection
- Plug-in connection of the supply voltage with AC - DC coding
- Protection class I (with protective conductor) in accordance with IEC 61140; VDE 0140, Part 1
- Limitation of the inrush current in accordance with NAMUR Recommendation NE 21
- Short-circuit-proof outputs
- Monitoring of both output voltages. If one of these voltages fails, the power supply module signals a fault to the CPU.
- Both output voltages (5 VDCand 24 VDC) share a common ground.
- Primary clocked
- Battery backup as option. The parameters set and the memory contents (RAM) are backed up via the backplane bus in the CPUs and programmable modules. In addition, the backup battery enables you to carry out a restart of the CPU. Both the power supply module and the backed up modules monitor the battery voltage.
- Operating and fault/error LEDs on the front plate.

Note

A mains disconnecting device must be provided when installing AC power supply modules.

Switching the line voltage Off/On

The power supply modules have an inrush current limiter in accordance with NAMUR.

Power supply module in invalid slot

If you insert the power supply module of a rack in an invalid slot, it will not power up. In this case, proceed as follows to start up the power supply module correctly:

1. Disconnect the power supply module from the mains (not just the standby switch).
2. Remove the power supply module.
3. Install the power supply module in slot 1.
4. Wait at least 1 minute and then switch the line voltage on again.

CAUTION

Danger of damage to equipment.

If you insert the power supply module in a slot that is not intended for power supply modules, the module may be damaged. Slots 1 to 4 are permitted, whereby power supply modules starting from slot 1 must be inserted without leaving gaps.

Make sure that power supply modules are only inserted in permissible slots.

3.3 Backup battery (option)

Introduction

The power supply modules of the S7-400 have a battery compartment for one or two backup batteries. Use of these batteries is optional.

Function of the backup batteries

If backup batteries have been installed, the parameters set and the memory contents (RAM) will be backed up via the backplane bus in CPUs and programmable modules if the power supply module is turned off or the supply voltage fails. The battery voltage must be within the tolerance range.

In addition, the backup battery enables you to carry out a restart of the CPU after power-on.

Both the power supply module and the backed up modules monitor the battery voltage.

Insert backup battery

Activate battery monitoring once you have installed one or two backup batteries. Make sure that neither the respective LED BATT1F or BATT2F nor the LED BAF are illuminated. Only then is the backup battery working properly and backup guaranteed as described above.

Note

Insert the power supply module in the rack and switch it on before you insert the backup battery for the first time. This will increase the service life of the backup battery.

Power supply modules with two backup batteries:

Some power supply modules contain a battery compartment for two batteries. If you use two batteries and set the switch to 2BATT, the power supply module defines one of the two batteries as the backup battery. This assignment remains in force until the battery is empty. When the backup battery is completely discharged, the system switches to the reserve battery which is then in turn used as the backup battery for the duration of its life. The status "backup battery" is also stored in the event of a power failure.

Battery type

You may only use batteries certified by Siemens! (see Appendix C: Spare parts (Page 429)).

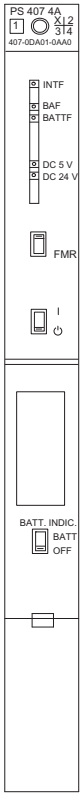
The batteries can form a passivation layer. Depassivation takes place when the batteries are inserted in the power supply module.

3.6 Power supply module PS 407 4A (6ES7407-0DA01-0AA0)

Function

The power module PS 407 4A is designed for connection to an 85 to 264 V AC network or an 88 to 300 V DC network, and supplies DC 5 V/4 A and DC 24 V/0.5 A at the secondary side.

PS 407 4A operator control and monitoring elements



Mounting screw

LEDs INTF, BAF,
BATTF,
5 V DC, 24 V DC

FMR button (Failure Message Reset)

Standby switch (does not cut off mains)

Under cover

Battery compartment

Switch BATT. INDIC, BATT,
OFF

3-pin power connector

Mounting screw

Figure 3-2 PS 407 4A operator control and monitoring elements

Mains connection

An AC power plug is used with PS 407 4A for connection to an AC network and for connection to a DC network.

Reverse polarity of L+ and L-

Reverse polarity of L+ and L with a supply voltage of DC 88 V to DC 300 V does not affect the function of the power supply. The connection should comply with the instructions in the installation manual.

PS 407 4A technical specifications

Dimensions, weight and cable cross-sections	
Dimensions W x H x D (mm) Weight Cable cross-section	25 x290x217 0.76 kg 3x1.5 mm^2 (stranded wire with wire end ferrule with insulating sleeve; use hose line only)
Cable diameter	3 to 9 mm
Input variables	
Input voltage	
• Rated value	DC 120/240 V AC 120/240 V
• Permitted range	88 to 300 V DC 85 to 264 V AC (wide range input)
Line frequency	
• Rated value	50/60 Hz
• Permitted range	47 to 63 Hz
Rated input current	
• With 120 V AC	0.38 A
• With 120 V DC	0.37 A
• With 240 V AC	0.22 A
• With 240 V DC	0.19 A
Leakage current	< 3.5 mA
Output variables	
Output voltage	
• Rated values	5.1 V DC/24 V DC
Output current	
• Rated values	5 V DC: 4 A 24 V DC: 0.5 A
Parameters	
Protection class pursuant to IEC 60536	I, with protective conductor
Overvoltage category	II
Pollution degree	2
Rated voltage U_e $0 < U_e \leq 50$ V 150 V < $U_e \leq 300$ V	Test voltage 700 V DC (secondary <-> PE) 2200 V DC (primary <-> secondary/PE)
Backup for power failures	> 20 ms at a repeat rate of 1 s, meets NAMUR recommendation NE 21
Power consumption 240 V AC	52 W
Power loss	20 W
Backup current	maximum of 100 µA when power off

Back-up battery (option)	1 x lithium AA, 3.6 V/2.3 Ah
Protective separation in accordance with IEC 61131-2	Yes