

# SIEMENS

SIMATIC

S7-400 - Power modules

Operating Instructions

Preface

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General specifications

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Power supply modules

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## 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.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
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:

 <b>WARNING</b>
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.

### Trademarks

All names identified by ® are registered trademarks of Siemens Aktiengesellschaft. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

### 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.

# Preface

## Preface

### Purpose of this manual

The information in this manual enables you to look up technical data of the power modules series 407 of the S7-400.

### Target group

This manual is aimed at people with the required qualifications to commission, operate and maintain the products described.

### Scope of the manual

The manual is valid for the power module of the automation system S7-400.

### Approvals

You can find details on the standards and approvals in the General specifications (Page 7) "General technical specifications" chapter.

### Position in the information landscape

The manual supplements the manual "Automation system S7-400 module data" (Chinese: A5E0043266, English: A5E53685514).

### Recycling and disposal

The S7-400 is environmentally friendly and is thus recyclable. For environmentally compliant recycling and disposal of your discarded device, please contact a company certified for the disposal of electronic waste.

### Basic knowledge required

This manual requires general knowledge of automation engineering.

In addition, you are required to know how to use computers or devices with similar functions (e. g. programming devices) under Windows 2000 or XP operating systems. Since S7-400 is configured with the *STEP 7* basic software, you have to have a good working knowledge of the software. You can acquire this knowledge in the manual "*Programming with STEP 7*". Read the notes on the safety of electronic controllers in the appendix of the Installation manual – especially when using an S7-400 in safety-relevant areas.

 **WARNING**

**Electrical hazards**

Ensure that the planning and execution of the electrical connection is only carried out by people who are qualified to do so. The relevant international and national regulations and standards for the construction of low-voltage systems and control cabinet installation as well as the conditions in the system on site must be observed. Observe the information on the type plate and in the documentation.

## Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit <https://www.siemens.com/cybersecurity-industry>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under <https://new.siemens.com/cert>.

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# General specifications

## 1.1 Standards, certificates and approvals

### Information on the nameplate

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**Note****Granted approvals on the nameplate of the device**

The specified approvals apply only when the corresponding marking is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the nameplate.

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** WARNING****Open Equipment**

Death, serious injury or substantial material damage can occur.

S7 400 modules are classified as open equipment, This means that the S7 400 should only be installed in an enclosure or cabinet.

Access to the enclosures or cabinets should only be possible with a key or with a tool, and access should only be permitted for trained or approved personnel.

### CE marking



Our products meet the requirements and protective objectives of the following EU Directives and comply with the corresponding European standards (EN):

- **2011/65/EU** Directive of the European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive)
- Directive **2014/35/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (Low-Voltage Directive)
- Directive **2014/30/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)

The EC Declaration of Conformity can be downloaded from the Customer Support Internet pages (keyword "declaration of conformity").

### EMC directive

SIMATIC products are designed for industrial applications.

Table 1-1 Use in industry

Area of application	Noise emission requirements	Noise immunity requirements
Industry	EN 61000-6-4	EN 61000-6-2

### Low-Voltage Directive

The products in the following table meet the requirements of EU Directive 2014/35/EU "Low-Voltage Directive". Compliance with this EU directive has been checked in accordance with DIN EN 61131-2 (corresponds to IEC 61131-2).

Table 1-2 Products that fulfill the requirements of the Low-Voltage Directive

Name	Order number
PS 407 4A	6ES7407-0DA02-4CA0
PS 407 4A XTR	6ES7407-0DA02-4CA1
PS 407 10A	6ES7407-0KA02-4CA0
PS 407 10A R	6ES7407-0KR02-4CA0
PS 407 10A XTR	6ES7407-0KR02-4CA1
PS 407 20A	6ES7407-0RA02-4CA0

#### Note

In the new releases, some of the devices listed above fulfill the requirements of the explosion protection guidelines instead of those of the Low-Voltage Directive. Please note the information on the nameplate.

### Safety requirements for installation

The S7-400 automation system is "open-type equipment" in accordance with standard IEC 61131-2 and therefore EU Directive 2014/35/EU (Low-Voltage Directive), and "open type" in accordance with UL/CSA certification.

To fulfill requirements for safe operation with regard to mechanical stability, flame retardation, stability, and shock-hazard protection, the following alternative types of installation are specified:

- Installation in a suitable cabinet
- Installation in a suitable housing
- Installation in a suitably equipped, enclosed operating area.



## 1.2 Electromagnetic compatibility


### Introduction

This section provides details of the immunity of S7-400 modules and information on RFI suppression.

All components of the S7-400 automation system meet the requirement of the standards applicable in Europe provided the system is installed in accordance with all applicable regulations (see *Installation manual, sections 2 and 4*).

### "EMC" definition

Electromagnetic compatibility (EMC) is the ability of an electrical device or system to operate satisfactorily in its electromagnetic environment without affecting that environment.

 <b>WARNING</b>
<b>Personal injury or property damage can result.</b>
Installing expansions that are not approved for the S7-400 can breach the requirements and regulations governing safety and electromagnetic compatibility.
Only use expansions that are approved for the system.

### Pulse-shaped interference

The table below shows the electromagnetic compatibility of the modules with pulse shaped interference. The system S7-400 system must meet the requirements and guidelines for electrical assembly.

Table 1-3 Pulse-shaped interference

Pulse-shaped interference	Test voltage		Corresponds to immunity test level
Electrostatic discharge in accordance with IEC 61000-4-2	Air discharge:	±8 kV	3
	Contact discharge:	±6 kV	
Burst (electrical fast transient) in accordance with IEC 61000-4-4	2 kV (power supply line) 2 kV (signal line >30 m) 1 kV (signal line <30 m)		3

1.2 Electromagnetic compatibility

Pulse-shaped interference	Test voltage	Corresponds to immunity test level
Surge in accordance with IEC 61000-4-5		3
<ul style="list-style-type: none"> <li>Asymmetrical connection</li> </ul>	2 kV (supply line) DC with protective components 2 kV (signal line/data line only > 30 m), where applicable with protective components	
<ul style="list-style-type: none"> <li>Symmetrical connection</li> </ul>	1 kV (supply line) DC with protective components 1 kV (signal line only > 30 m), where applicable with protective components	

**Sinusoidal interference**

The table below shows S7-400 module EMC for sinusoidal interference.

Table 1-4 Sinusoidal interference

Sinusoidal interference	Test values	Corresponds to immunity test level
High frequency radiation (electromagnetic fields) in accordance with IEC 61000-4-3	80 MHz to 1 GHz and 1 GHz to 3 GHz 10 V/m with 80 % amplitude modulation at 1 kHz 3 GHz to 6 GHz 3 V/m with 80 % amplitude modulation at 1 kHz	3
HF currents on cables and cable shielding in accordance with IEC 61000-4-6	Test voltage 10 V with 80 % amplitude modulation of 1 kHz in a range of 10 kHz to 80 MHz	3

**Emission of radio frequency interference**

Emissions from electromagnetic fields in accordance with EN 61000-6-4.

Emissions over main AC supply in accordance with 61000-6-4.

**Line harmonics**

The AC power modules for S7-400 comply with the following standards for line harmonics:

Harmonic current: EN 61000-3-2

Voltage supply fluctuations and flicker: EN 61000-3-3

### Additional measures

If you want to connect an S7-400 system to the public network, you must ensure compliance with **class B pursuant to EN 55032**.

Appropriate additional measures are to be taken if you need to increase the immunity of the system in the light of high external interference.

## 1.3 Shipping and storage conditions for modules and backup batteries

### Transport and storage of modules

S7-400 modules exceed the requirements of IEC 61131-2 with regard to transport and storage conditions. The following specifications apply for modules that are transported or stored in their original packaging.

Table 1-5 Transport and storage conditions for modules

	Permitted range
Free fall	≤ 1 m (up to 10 kg)
Temperature	-40°C to +70 °C
Air pressure	1080 to 660 hPa (corresponds to a height of -1000 to 3500 m)
Relative humidity (at +25 °C)	5% to 95%, non-condensing
Sinusoidal oscillations according to IEC 60068-2-6	5 - 9 Hz: 3.5 mm 9 - 500 Hz: 9.8 m/s <sup>2</sup>
Shock according to IEC 60068-2-29	250 m/s <sup>2</sup> , 6 ms, 1000 shocks

### Transport and buffer batteries

If possible, transport buffer batteries in their original packaging. No special measures are required for the transport of the buffer batteries used in the S7-400 system. The lithium content of the buffer battery is less than 0.5 g.

### Storage of buffer batteries

Buffer batteries must be stored in a cool and dry place. The maximum storage period of the backup battery 6ES7971-0BA01 amounts to 10 years.



**WARNING**

**Danger of personal injury and property damage, danger of irritation by harmful substances.**

Incorrect handling can cause a lithium battery to explode, and incorrect disposal of old lithium batteries can release harmful substances. It is therefore essential that you observe the following instructions:

Do not throw new or discharged batteries into fire and do not solder on the cell body (max. temperature 100 °C), also do not recharge - danger of explosion! Do not open batteries, only replace them with identical types. Only obtain replacements from Siemens (for order number, see *Reference Manual "Module Data"*, Appendix C). This ensures that you have a short-circuit-proof type.

If possible, old batteries should be given to battery manufacturers/recyclers or disposed of as hazardous waste.

## 1.4 Information on insulation tests, protection class and degree of protection

### Test voltages

Where required, insulation resistance is proved in routine testing with test voltages in accordance with IEC 61131-2.

### Protection class

Protection class I in accordance with IEC 61140, i.e. protective conductor connection to power module required!

### Protection from foreign objects and water

IP20 in accordance with IEC 60529, i.e. protection against contact with standard probes.

There is no water ingress protection.

*1.4 Information on insulation tests, protection class and degree of protection*

## Power supply modules

### 2.1 Power module PS 407 4A (6ES7407-0DA02-4CA0)

#### 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

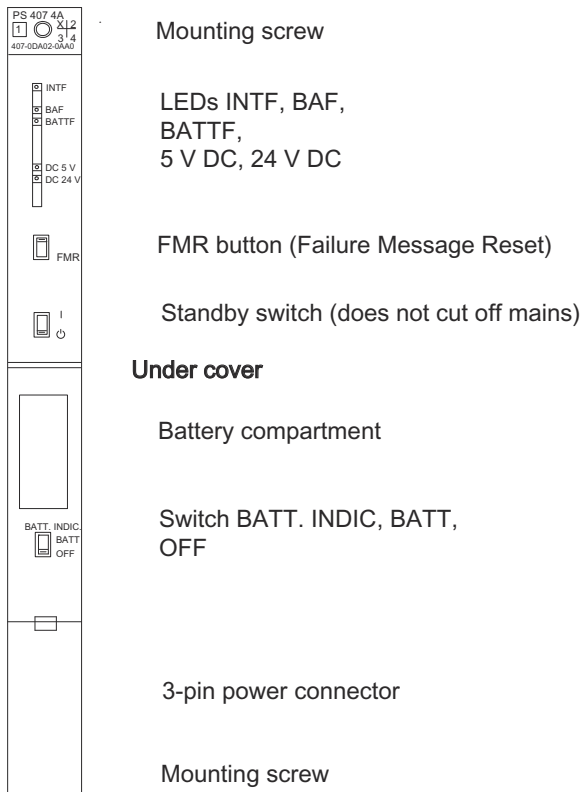


Figure 2-1 PS 407 4A operator control and monitoring elements

#### 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 88 V DC to 300 V DC does not affect the function of the power supply. The connection should comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".



## PS 407 4A technical specifications

<b>Article number</b>	<b>6ES7407-0DA02-4CA0</b>
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	350 mA
Rated value at 230 V DC	190 mA
Rated value at 120 V AC	0.42 A
Rated value at 230 V AC	0.22 A
Inrush current, max.	8.5 A; Full width at half maximum 5 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	4 A; no base load required
for backplane bus (24 V DC), max.	0.5 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	52 W
<b>Power loss</b>	
Power loss, typ.	20 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V
• Backup current, max.	100 µA; When power off

## 2.2 Power module PS 407 4A XTR (6ES7407-0DA02-4CA1)

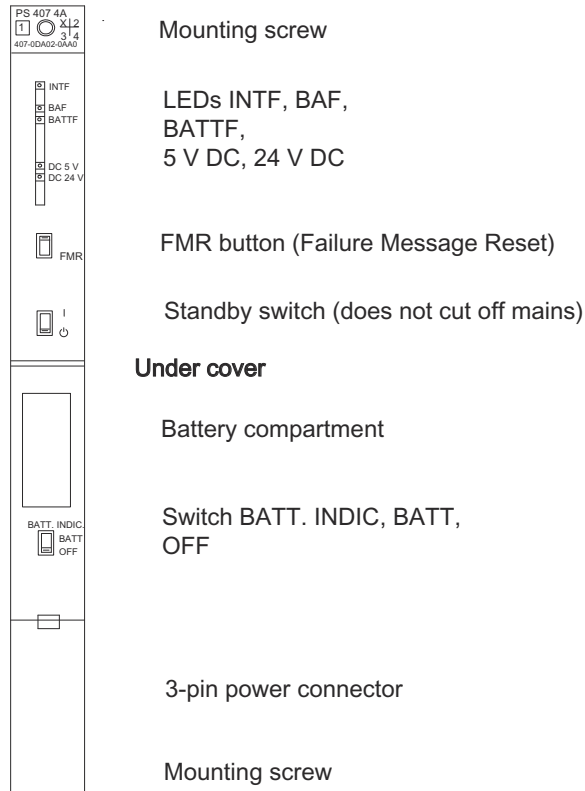
<b>Article number</b>	<b>6ES7407-0DA02-4CA0</b>
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	1
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Overvoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	60 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	25 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	760 g

## 2.2 Power module PS 407 4A XTR (6ES7407-0DA02-4CA1)

### Function

The power module PS 407 4A XTR 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 XTR 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 2-2 PS 407 4A XTR operator control and monitoring elements

## Mains connection

An AC power plug is used with PS 407 4A XTR both 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 88 V DC to 300 V DC does not affect the function of the power supply. The connection should comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".

## PS 407 4A XTR technical specifications

<b>Article number</b>	<b>6ES7407-0DA02-4CA1</b>
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	350 mA
Rated value at 230 V DC	190 mA
Rated value at 120 V AC	0.42 A
Rated value at 230 V AC	0.22 A
Inrush current, max.	8.5 A; Full width at half maximum 5 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	4 A; no base load required
for backplane bus (24 V DC), max.	0.5 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	52 W
<b>Power loss</b>	
Power loss, typ.	20 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V
• Backup current, max.	100 µA; When power off

<b>Article number</b>	<b>6ES7407-0DA02-4CA1</b>
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	1
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Overvoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	70 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	25 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	760 g

## 2.3 Power module PS 407 10A (6ES7407-0KA02-4CA0)

### Function

The power modules PS 407 10A (standard) and PS 407 10A R (for redundant operation, see AUTOHOTSPOT) are designed for connection to an 85-264 V AC network or an 88-300 V DC network, and supply 5 V/10 A DC and 24 V/1 A DC at the secondary side.

### PS 407 10A and PS 407 10A R operator control and monitoring elements

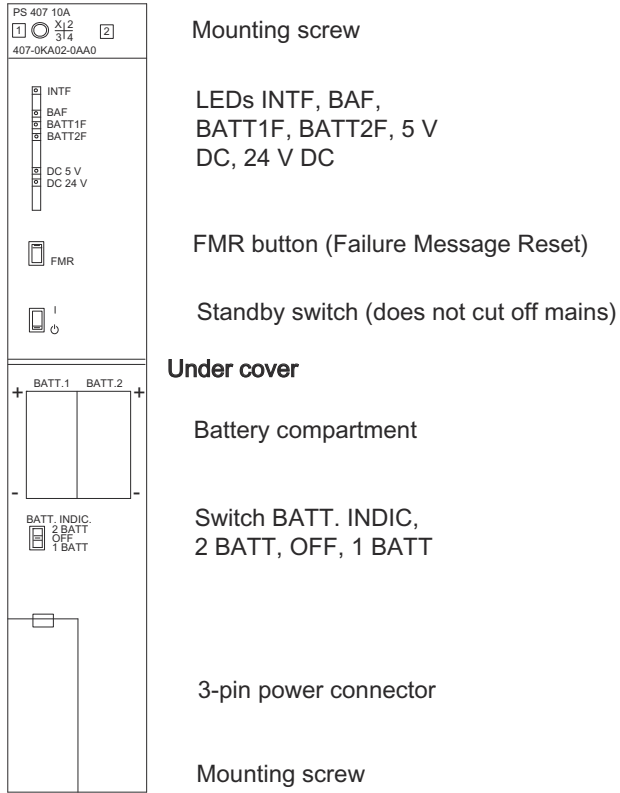


Figure 2-3 PS 407 10A and PS 407 10A R operator control and monitoring elements

### Mains connection

An AC power plug is used with PS 407 10A and PS 407 10A R both for connection to an AC network and connection to a DC network.

### Reverse polarity of L+ and L-

Reverse polarity of L+ and L with a supply voltage of 88 V DC to 300 V DC does not affect the function of the power supply. The connection must comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".

## PS 407 10A technical specifications

<b>Article number</b>	<b>6ES7407-0KA02-4CA0</b>
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	1 A
Rated value at 230 V DC	0.5 A
Rated value at 120 V AC	0.9 A
Rated value at 230 V AC	0.5 A
Inrush current, max.	63 A; Full width at half maximum 1 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	10 A; no base load required
for backplane bus (24 V DC), max.	1 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	95 W
<b>Power loss</b>	
Power loss, typ.	20 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V

## 2.4 Power module PS 407 10A R (6ES7407-0KR02-4CA0)

<b>Article number</b>	<b>6ES7407-0KA02-4CA0</b>
• Backup current, max.	100 $\mu$ A; When power off
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	2
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Overtoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	60 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	1 200 g

## 2.4 Power module PS 407 10A R (6ES7407-0KR02-4CA0)

### Function

The power modules PS 407 10A R (for redundant operation) are designed for connection to an 85-264 V AC network or an 88-300 V DC network, and supply 5 V/10 A DC and 24 V/1 A DC at the secondary side.



## PS 407 10A R operator control and monitoring elements

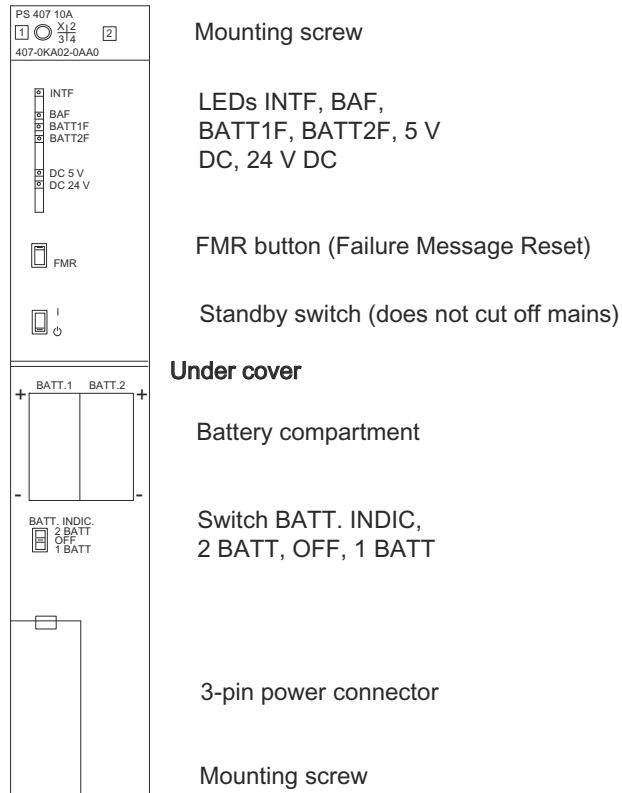


Figure 2-4 PS 407 10A R operator control and monitoring elements

### Mains connection

An AC power plug is used with PS 407 10A R both 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 88 V DC to 300 V DC does not affect the function of the power supply. The connection must comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".

## PS 407 10A R technical specifications

<b>Article number</b>	<b>6ES7407-0KR02-4CA0</b>
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	1 A
Rated value at 230 V DC	0.5 A
Rated value at 120 V AC	0.9 A
Rated value at 230 V AC	0.5 A
Inrush current, max.	63 A; Full width at half maximum 1 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	10 A; no base load required
for backplane bus (24 V DC), max.	1 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	95 W
<b>Power loss</b>	
Power loss, typ.	20 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V
• Backup current, max.	100 µA; When power off

<b>Article number</b>	<b>6ES7407-0KR02-4CA0</b>
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	2
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Overvoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	60 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	1 200 g

## 2.5 Power module PS 407 10A XTR (6ES7407-0KR02-4CA1)

### Function

The power modules PS 407 10A XTR (for redundant operation) are designed for connection to an 85-264 V AC network or an 88-300 V DC network, and supply DC 5 V/10 A and DC 24 V/1 A at the secondary side.

### PS 407 10A XTR operator control and monitoring elements

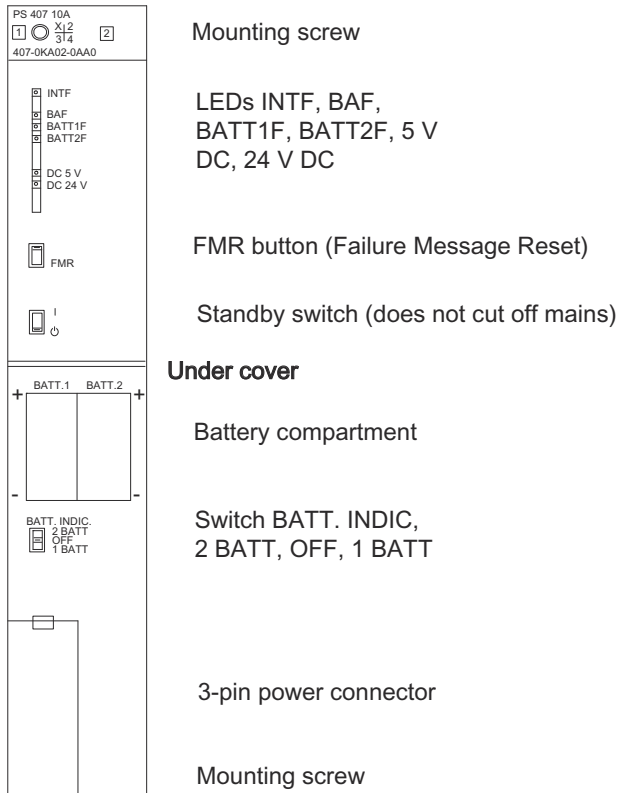


Figure 2-5 PS 407 10A XTR operator control and monitoring elements

### Mains connection

An AC power plug is used with PS 407 10A XTR both 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 88 V DC to 300 V DC does not affect the function of the power supply. The connection must comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".

## PS 407 10A XTR technical specifications

<b>Article number</b>	<b>6ES7407-0KR02-4CA1</b>
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	1 A
Rated value at 230 V DC	0.5 A
Rated value at 120 V AC	0.9 A
Rated value at 230 V AC	0.5 A
Inrush current, max.	63 A; Full width at half maximum 1 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	10 A; no base load required
for backplane bus (24 V DC), max.	1 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	95 W
<b>Power loss</b>	
Power loss, typ.	20 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V
• Backup current, max.	100 µA; When power off

## 2.6 Power module PS 407 20A (6ES7407-0RA02-4CA0)

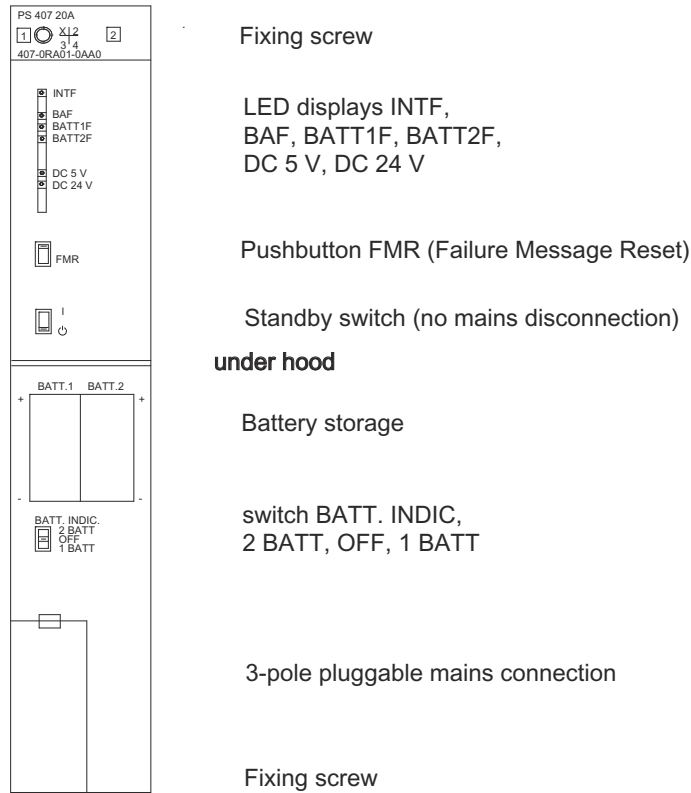
<b>Article number</b>	<b>6ES7407-0KR02-4CA1</b>
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	2
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Oversvoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	70 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	1 200 g

## 2.6 Power module PS 407 20A (6ES7407-0RA02-4CA0)

### Function

The power module PS 407 20A is designed for connection to an 85-264 V AC network or an 88-300 V DC network, and supply 5 V/20 A DC and 24 V/1 A DC at the secondary side.

## PS 407 20A operator control and monitoring elements



Fixing screw

LED displays INTF,  
BAF, BATT1F, BATT2F,  
DC 5 V, DC 24 V

Pushbutton FMR (Failure Message Reset)

Standby switch (no mains disconnection)

### under hood

Battery storage

switch BATT. INDIC,  
2 BATT, OFF, 1 BATT

3-pole pluggable mains connection

Fixing screw

## Mains connection

An AC power plug is used with PS 407 20A both 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 88 V DC to 300 V DC does not affect the function of the power supply. The connection must comply with the instructions in the manual "Automation systems S7-400, M7-400 Set up".

## PS 407 20A technical specifications

Article number	6ES7407-0RA02-4CA0
<b>Supply voltage</b>	
Rated value (DC)	
• 120 V DC	Yes
• 230 V DC	Yes
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
<b>Line frequency</b>	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Mains buffering</b>	
• Mains/voltage failure stored energy time	20 ms
• Mains buffering according to NAMUR recommendation	Yes
<b>Input current</b>	
Rated value at 120 V DC	1.4 A
Rated value at 230 V DC	0.7 A
Rated value at 120 V AC	1.4 A
Rated value at 230 V AC	0.7 A
Inrush current, max.	88 A; Full width at half maximum 1.1 ms
Leakage current, max.	5 mA
<b>output voltage / header</b>	
Type of output voltage	DC
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
<b>Output current</b>	
for backplane bus (5 V DC), max.	20 A; no base load required
for backplane bus (24 V DC), max.	1 A; idling-proof
Short-circuit protection	Yes
<b>Power</b>	
Active power input, typ.	158 W
<b>Power loss</b>	
Power loss, typ.	35 W
<b>Battery</b>	
<b>Backup battery</b>	
• Backup battery (optional)	Yes; 1x lithium AA; 3.6 V / 2.2 Ah
• Backup voltage	3.6 V
• Backup current, max.	100 µA; When power off



<b>Article number</b>	6ES7407-ORA02-4CA0
<b>Hardware configuration</b>	
<b>Slots</b>	
• required slots	2
<b>Potential separation</b>	
primary/secondary	Yes
<b>Isolation</b>	
Overvoltage category	II
<b>EMC</b>	
<b>Compliance with line harmonic distortion limits</b>	
• Compliance with line harmonic distortion acc. to IEC 61000-3-2, IEC 61000-3-3	Yes
<b>Degree and class of protection</b>	
Equipment protection class	I, with protective conductor
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	60 °C
<b>connection method</b>	
Design of electrical connection	3x 1.5 mm <sup>2</sup> , solid or stranded wire with end sleeve, external diameter 3 mm to 9 mm
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	217 mm
<b>Weights</b>	
Weight, approx.	1 300 g

