OFFICIAL MANUFACTURER DOCUMENT PACKAGE

Installation Instructions

6ES7416-3FR05-0AB0

Siemens official documentation for the exact article number.

Source: 6ES7416-3FR05-0AB0.pdf

Selected official Siemens pages follow this cover.

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

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

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 adhered to. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of the Siemens AG. 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.

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- Docking station - changing IO devices during operation (tool change)
  as of STEP 7 V5.4 SP4
- Extension of the web server functionality:
  as of STEP 7 V5.4 SP4
  - Module state
  - Topology
  - Refresh display

Basic knowledge required

To understand this manual, you should have general experience in the field of automation engineering.

You should also have experience of working with computers or PC-type tools (for example programming devices) and the Windows 2000 or XP operating system. The S7-400 is configured with the STEP 7 basic software, so you should also have experience of working with the basic software. You can acquire this knowledge in the *Programming with STEP 7* manual.

In particular when using an S7-400 in areas subject to safety regulations, note the information relating to the safety of electronic controllers in the Appendix of the *S7-400 Programmable Controller; Hardware and Installation* manual.

Validity of the manual

The manual applies to the CPUs listed below:

- CPU 412-1, V5.2; 6ES7 412-1XJ05-0AB0
- CPU 412-2, V5.2; 6ES7-412-2XJ05-0AB0
- CPU 414-2, V5.2; 6ES7 414-2XK05-0AB0
- CPU 414-3, V5.2; 6ES7 414-3XM05-0AB0
- CPU 414-3 PN/DP, V5.2; 6ES7 414-3EM05-0AB0
- CPU 416-2, V5.2; 6ES7 416-2XN05-0AB0
- CPU 416F-2, V5.2; 6ES7 416-2FN05-0AB0
- CPU 416-3, V5.2; 6ES7 416-3XR05-0AB0
- CPU 416-3 PN/DP, V5.2; 6ES7 416-3ER05-0AB0
- CPU 416F-3 PN/DP, V5.2; 6ES7 416-3FR05-0AB0
- CPU 417-4, V5.2; 6ES7 417-4XT05-0AB0

General technical specifications

Information about approvals and standards can be found in the *S7-400 Programmable Controller; Module Specifications* manual.

Related documentation

This manual is part of the documentation package for the S7-400.

System	Documentation package
S7-400	• S7-400 Automation System; Hardware and Installation • S7-400 Automation Systems; Module Specifications • Instruction List S7-400 • S7-400 Automation System; CPU Specifications

Additional information

You can find further and additional information on the topics in this manual in the following manuals:

Programming with STEP 7 (http://support.automation.siemens.com/WW/view/en/18652056)

Configuring Hardware and Communication Connections with STEP 7 (http://support.automation.siemens.com/WW/view/en/18652631)

System and Standard Functions (http://support.automation.siemens.com/WW/view/en/1214574)

PROFINET system description (http://support.automation.siemens.com/WW/view/en/19292127)

Isochrone mode (http://support.automation.siemens.com/WW/view/en/15218045)

Recycling and disposal

The S7-400 is low in contaminants and can therefore be recycled. For ecologically compatible recycling and disposal of your old device, contact a certified disposal service for electronic scrap.

Additional support

Please talk to your Siemens contact at one of our representatives or local offices if you have questions about the products described here and do not find the answers in this manual.

You will find information on who to contact at:

http://www.siemens.com/automation/partner

A guide to the technical documents for the various SIMATIC products and systems is available at:

http://www.siemens.de/simatic-tech-doku-portal

You will find the online catalog and online ordering system at:

http://mall.ad.siemens.com/

MPI/DP interface

You can connect various devices to the MPI interface of the CPU, for example:

- Programming devices
- Operator control and monitoring devices
- Other S7-400 or S7-300 controllers

Use the bus connection connector with tilted cable outlet, see the *S7-400 Automation System, Hardware and Installation* manual.

You can also configure the MPI interface as a DP master so that you can use it as a PROFIBUS DP interface with up to 32 DP slaves.

PROFIBUS DP interface

You can connect the distributed I/O, programming devices/OPs and other DP master stations to the PROFIBUS DP interface.

PROFINET interface

You can connect PROFINET IO devices to the PROFINET interface. The PROFINET interface has 2 switched ports facing outwards (RJ 45). The PROFINET interface provides the connection to the Industrial Ethernet.

⚠ CAUTION

You can only connect to an Ethernet LAN with this interface. You cannot connect to the public telecommunication network, for example.

You can only connect network components that conform to PROFINET to this interface.

Incoming supply, external backup voltage at the "EXT.-BATT." socket

You can install one or two backup batteries in the S7-400 power supply modules, depending on the module type, to achieve the following result:

- Back up the user program stored in RAM.
- Retain the values of flags, timers, counters, system data and the data in dynamic DBs.
- Back up the internal clock.

The same backup function can be achieved by applying a voltage of between 5 V DC and 15 V DC to the "EXT.-BATT." jack of the CPU.

The "EXT.-BATT." input has the following features:

- Polarity reversal protection
- Short-circuit current limited to 20 mA

You need a cable with a 2.5 mm Ø jack plug to connect the power supply to the "EXT.-BATT" jack, as shown in the following illustration. Make sure the polarity of the jack plug is correct.