SIEMENS

SIMATIC
S7-1500
Product Information Letter of Volatility for memory components and SIMATIC Memory Cards in SIMATIC S7-1500 CPUs

Product Information

Introduction

The following Product Information shows the different memory types of SIMATIC S7-1500 CPUs, including SIMATIC Memory Cards for S7-1x00 CPUs.

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 more information on protective industrial cybersecurity measures for implementation, please visit (https://www.siemens.com/industrialsecurity).

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 customers' exposure to cyber threats.

To stay informed about product updates at all times, subscribe to the Siemens Industrial Cybersecurity RSS Feed under (https://www.siemens.com/industrialsecurity).

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Memory types

Product article number	Memory type	Volatility	Usage	User accessible	Action to delete data
SIMATIC Memory Card for S7-1x00 CPU 6ES7954-8LC04-0AA0 6ES7954-8LE04-0AA0 6ES7954-8LF04-0AA0 6ES7954-8LL04-0AA0 6ES7954-8LP04-0AA0 6ES7954-8LT04-0AA0 6ES7954-8LP80-0AA0 6ES7954-8LT80-0AA0	SD Card [1]	Non-volatile	User data, user program, CPU configuration	Yes, e. g. programming device (PG) or a SC card reader on a PC/laptop	Programming device (PG) or a SC card reader on a PC/laptop (no secure data deletion) or secure erase [1]
CPU 1515SP PC3 - M.2SSD 6ES7678-2BA00-0AA0 6ES7678-2BD00-2AA0 6ES7678-2BD00-3AA0 6ES7678-2BS00-2AA0 6ES7678-2BS00-3AA0 6ES7678-2BD00-4AA0 6ES7678-2BS00-4AA0 6ES7678-2BV00-4AA0 6ES7678-2BW00-4AA0	SATA M.2 Card	Non-volatile	Firmware, operating system	Yes, via M.2 SATA adapter on a PC/Laptop	via M.2 SATA adapter on a PC/Laptop, also secure erase possible [1]

[1] Use a secure erase utility; these tools typically write a stream of zeros, ones, or random data to all areas of the memory card to erase data -> see note below

Product article number	Memory type	Volatility	Usage	User accessible	Action to delete data
S7-1500 Compact: **CPU 1511C-1PN** 6ES7511-1CL03-0AB0 **CPU 1512C-1PN** 6ES7512-1CM03-0AB0 **S7-1500 Standard:** **CPU1511-1PN** 6ES7511-1AL03-0AB0 **CPU 1513-1PN** 6ES7513-1AM03-0AB0 **CPU 1515-2PN** 6ES7515-2AN03-0AB0 **CPU 1516-3PN/DP** 6ES7516-3AP03-0AB0 **CPU 1517-3PN** 6ES7517-3AQ10-0AB0 **CPU 1518-3PN** 6ES7518-3AT10-0AB0 **S7-1500 F:** **CPU 1511F-1PN** 6ES7511-1FL03-0AB0 **CPU 1513F-1PN** 6ES7513-1FM03-0AB0 **CPU 1515F-2PN** 6ES7515-2FN03-0AB0 **CPU 1516F-3PN/DP** 6ES7516-3FP03-0AB0 **CPU 1517F-3PN** 6ES7517-3FQ10-0AB0 **CPU 1518F-3PN** 6ES7518-3FT10-0AB0 **S7-1500 T/TF:** **CPU 1511T-1PN** 6ES7511-1TL03-0AB0 **CPU 1511TF-1PN** 6ES7511-1UL03-0AB0 **CPU 1515T-2PN** 6ES7515-2TN03-0AB0 **CPU 1515TF-2PN** 6ES7515-2UN03-0AB0 **CPU 1516T-3PN** 6ES7516-3TP10-0AB0 **CPU 1516TF-3PN** 6ES7516-3UP10-0AB0 **CPU 1517T-3PN** 6ES7517-3TQ10-0AB0 **CPU 1517TF-3PN** 6ES7517-3UQ10-0AB0 **CPU 1518T-3PN** 6ES7518-3TT10-0AB0 **CPU 1518TF-3PN** 6ES7518-3UT10-0AB0	DRAM[1]	Volatile	User data + Runtime memory	Yes, modifiable by CPU	Power-off
	RTC[1] (Real Time Clock)	Non-volatile	Time/Date	Yes, (change time/date)	Reset to delivery state[6]
	NAND flash[1,5]	Non-volatile	Boot code	No	N/A
			User retain data (e. g. retain variables), IP/DP parameters	Yes, modifiable by CPU and engineering system	Reset to delivery state[6]
			Diagnostic data (CPU)	Readable (diagnostic data, e. g. using engineering system, web server)	Reset to delivery state[6]
			Firmware	Yes, (firmware update)	N/A
S7-1500 R/H/HF: **CPU 1513R-1PN** 6ES7513-1RM03-0AB0	ASIC internal memories[1]	Volatile	Temporary buffer memories	No	Power-off
	Controller internal flash[1]	Non-volatile	Firmware	Yes, (firmware update)[5]	N/A

Product article number	Memory type	Volatility	Usage	User accessible	Action to delete data
CPU 1515R-2PN 6ES7515-2RN03-0AB0 **CPU 1517H-4PN** 6ES7517-4HQ10-0AB0 **CPU 1518HF-4PN** 6ES7518-4JT10-0AB0 **ET 200SP:** **CPU 1510SP-1PN** 6ES7510-1DK03-0AB0 **CPU 1510SP-F-1PN** 6ES7510-1SK03-0AB0 **CPU 1512SP-1PN** 6ES7512-1DM03-0AB0 **CPU 1512SP-F-1PN** 6ES7512-1SM03-0AB0 **CPU 1514SP-2PN** 6ES7514-2DN03-0AB0 **CPU 1514SP-F-2PN** 6ES7514-2SN03-0AB0 **CPU 1514SP-T-2PN** 6ES7514-2VN03-0AB0 **CPU 1514SP-TF-2PN** 6ES7514-2WN03-0AB0 **CPU1515SP PC3** 6ES7677-2DD40-0AA0 **ET 200SP, CM DP for ET 200SP CPU** 6ES7545-5DA00-0AB0 **ET 200pro:** **CPU 1513pro -2PN** 6ES7513-2PM03-0AB0 **CPU 1513pro F-2PN** 6ES7513-2PM03-0AB0 **CPU 1516pro -2PN** 6ES7516-2PP03-0AB0 **CPU 1516pro F-2PN** 6ES7516-2GP03-0AB0	Controller internal RAM[1]	Volatile	Runtime memory	No	Power-off
	NOR flash [4]	Non-volatile	HW functions, boot code	Yes, (firmware update)[4]	N/A
	Embedded flash for integrated AI/AO[2]	Non-volatile	HW parameters	Yes, modifiable by CPU (user program)	N/A
	EEPROM[3]	Non-volatile	HW functions, boot code[1]	No	N/A
	Embedded flash for integrated AI/AO [2]	Non-volatile	Firmware	Yes, (firmware update)	N/A
	Embedded SRAM - for integrated AI/AO[1, 2, 5]	Volatile	Runtime memory	Yes, modifiable by CPU	Power-off

[1] Not used in ET 200SP CM DP
[2] Only compact CPUs
[3] Only ET 200SP CM DP
[4] Only 1516T(F), 1517 (F, T, TF, H), 151 (F, T, TF, HF)
[5] Not used in CPU 1515SP PC3
[6] Relevant manuals see next page
N/A: Not applicable

Note:

- There is no user program stored in non-volatile memory on SIMATIC S7-1500 CPUs (Requirement: SIMATIC Memory Card for S7-1x00 CPU is removed!)

  User data (e.g. user program, PLC variables, and module parameter values) is stored in non-volatile memory on the SIMATIC Memory Card. Data can be erased when the SIMATIC Memory Card for S7-1x00 CPU is plugged into the CPU or plugged into a programming device (e.g. SIMATIC Field PG) or a standard SD card reader connected to a PC/laptop using the software SIMATIC TIA Portal.

  For details, see:

  How to delete data from an SMC (SIMATIC Memory Card for S7-1x00 CPU) (https://support.industry.siemens.com/cs/us/en/view/59193101)

- Note:

  This does not constitute secure data deletion. For secure deletion, format the digital memory card using Windows tools, and then use a 3rd party tool for secure deletion of data. Follow the conditions and instructions provided by the 3rd party deletion tool.

  Retained user data (e.g. PLC variables or IP/DP parameters) is stored in non-volatile memory on SIMATIC S7-1500 CPUs.

- **Deletion of data from CPUs**
  The "Reset to factory settings" function can be used to delete all data from the data memories of the CPU.
  You can find information on deleting data in the System Manual SIMATIC S7-1500, ET 200MP Automation system (https://support.industry.siemens.com/cs/ww/en/view/59191792), "Securely removing data" and "Reset to factory settings" sections.

- SIMATIC S7-1500 CPUs contain a real time clock (RTC). Backup time is at least 6 weeks after CPU is powered off. When the backup time has expired, RTC is reset to its delivery state.

  For more details, refer to the corresponding SIMATIC S7-1500 CPU Equipment Manual (https://support.industry.siemens.com/cs/products?dtp=Manual&mfn=ps&pnid=13895&lc=en-WW).

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Siemens Aktiengesellschaft
Digital Industries
Postfach 48 48
90026 NÜRNBERG
GERMANY

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