SIEMENS

SIMATIC S5

Product Information

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AG S5-95F

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This Product Information contains **important information** about the programmable controller S5-95F. It is a separate component and should be considered **more up-to-date** than the information in the manuals and catalogs if uncertainties arise.

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Achievable Safety Classes for Test and Quasi-Safety Operation

1 Version S5-95F:

The S5-95F can be used for **AK6** or **SIL3** or **Category 4** as delivered. Prerequisite for this is to follow all rules and measures mentioned in the chapter on safety. In general, the following applies:

- The plant should be exclusively operated in **S5-95F safety operation** (test operation only for commissioning);

- Measures for detecting logic configuration and programming errors as well as programming device errors have to be taken.

2 Measures for Continuous S5-95F Test Operation in AK4 or SIL2 or Category 3:

If the safety class is reduced to **AK4** or **SIL2** or **Category 3,** special organizational measures allow the S5-95F to run in **test operation**:

- Modification of the user program only by authorized persons;

- Function test of the most critical functions for each new program version;

- After a modified user program has been loaded and started up for the first time, a module comparison between a created user program and one that has been loaded to the PLC is necessary to detect possible errors caused by processing in the programming device and the transfer from the programming device to the PLC.

- If one of several valid and tested program versions is reloaded from the programming device to the PLC, it has to be identified by comparing the existing with the newly generated CRC.

AK4 Operating Sequence for Operating Standstills Exceeding 72 Hours:

- After operating standstills exceeding **72 h,** the S5-95F has to be started up in safety operation (with EPROM user memory module) or quasi-safety operation (without EPROM user memory module) in order for the **startup test** to become effective, which is skipped during test operation.
  After the RUN state has been reached, **safety operation may** be replaced again by **test operation.**

- Switch the system to STOP and carry out a memory reset. Then reload the valid and tested program version from the programming device to the PLC and identify it by comparing the existing with the newly generated CRC. Thus, the safety class **AK4** or **SIL2** or **Category 3** is achieved.

OR

- After an operating standstill exceeding **72 h** the plant **is operated under supervision** for the first hour (within 1 h the entire self test is processed). This applies exclusively for plants requiring reaction times which can be fulfilled by the operator. Thus, the plant can be operated in safety class **AK4** or **SIL2** or **Category 3** even after extended operating standstills.

AK3 Operating Sequence for Operating Standstills Exceeding 72 Hours:

• After an operating standstill exceeding **72 h,** the plant **is not operated under supervision** for the first hour. Thus, the plant can be operated in safety class **AK3** or **SIL1** or **Category 2** even after extended operating standstills.

3 Operating the S5-95F in Quasi-Safety Operation for AK6 or SIL3 or Category 4:

In Sections 2.5.2 and 18.3 "Operating Modes " of the manual "S5-95F Programmable Controller" (EWA 4NEB 812 6220-01) you can read, that quasi-safety operation for continuous operation of a plant **must not be used** in safety class AK4 or SIL2 or Category 3. The reason for this is that the user program storage in RAM is not error-proof. However, this restriction is no longer justified due to the present state of safety engineering. The two-channel user program storage and its verification by RAM comparison is a high-quality error detection measure to prevent the user program from being corrupted.

$\Rightarrow$ Thus, the plant can also be continuously operated in quasi-safety operation in safety class **AK6** or **SIL3** or **Category 4**.

Loading the user program safely
• After loading and starting up the tested user program, the existing and the newly generated user program signatures (see manual COM95F Section 2.1) have to be compared in order to detect possible corruptions due to processing in the programming device and transfer from the programming device to the PLC.

Displaying the operating mode:
• The current operating mode of the S5-95F is displayed above the system date 57.
    SD57: 0000$_H$ S5-95F is in test operation
    SD57: FFFF$_H$ S5-95F is in quasi-safety operation or safety operation