Performance segments of fail-safe CPUs

The fail-safe CPUs are intended for users who want to implement demanding standard and fail-safe applications both centrally and decentrally.

These fail-safe CPUs allow the processing of standard and safety programs on a single CPU. This allows fail-safe data to be evaluated in the standard user program. The integration also provides the system advantages and the extensive functionality of SIMATIC for fail-safe applications.

The fail-safe CPUs are certified for use in safety mode up to:

- Safety class (Safety Integrity Level) SIL 3 according to IEC 61508:2010
- Performance Level (PL) e and Category 4 according to ISO 13849-1:2015 or EN ISO 13849-1:2015

Additional password protection for F-configuration and F-program is set up for IT security.

Table 3-5 Fail-safe CPUs

CPU	Performance segment	PROFIBUS interfaces	PROFINET IO RT/IRT interfaces	PROFINET IO RT interface	Basic PROFINET functionality	Work memory	Processing time for bit operations
CPU 1511F-1 PN	Fail-safe CPU for smaller to medium-sized applications	--	1	--	--	1.95 MB	6 ns
CPU 1511TF-1 PN	Fail-safe technology CPU for small to mid-range applications	--	1	--	--	1.95 MB	6 ns
CPU 1513F-1 PN	Fail-safe CPU for medium-sized applications	--	1	--	--	3.4 MB	6 ns
CPU 1515F-2 PN	Fail-safe CPU for medium-sized to large applications	--	1	1	--	6 MB	6 ns
CPU 1515TF-2 PN	Fail-safe technology CPU for high-performance applications and communication tasks	--	1	1	--	6 MB	6 ns
CPU 1516F-3 PN/DP	Fail-safe CPU for high-performance applications and communication tasks	1	1	1	--	10.5 MB	6 ns
CPU 1516TF-3 PN	Fail-safe technology CPU for high-performance applications and communication tasks	--	2	--	1	18 MB	1.2 ns
CPU 1517F-3 PN	Fail-safe CPU for high-performance applications and communication tasks	--	2	--	1	56 MB	0.6 ns

* 50 MB of the integrated work memory is reserved for the function library of CPU runtime

CPU	Performance segment	PROFIBUS interfaces	PROFINET IO RT/IRT interfaces	PROFINET IO RT interface	Basic PROFINET functionality	Work memory	Processing time for bit operations
CPU 1517TF-3 PN	Fail-safe technology CPU for high-performance applications and communication tasks	--	2	--	1	56 MB	0.6 ns
CPU 1518F-3 PN	Fail-safe CPU for high-performance applications, demanding communication tasks, and very short reaction times	--	2	--	1	168 MB	0.3 ns
CPU 1518F-4 PN/DP MFP	Fail-safe CPU for high-performance applications, demanding communication tasks, very short reaction times, and C/C++ blocks for the user program	1	1	1	1	119* MB	1 ns
CPU 1518TF-3 PN	Technology CPU for high-performance motion control applications with large volumes, demanding communication tasks, and very short reaction times	--	2	--	1	168 MB	0.3 ns

* 50 MB of the integrated work memory is reserved for the function library of CPU runtime

In addition to the CPUs, further components such as SINAMICS drives dispose of integrated safety functions. Additional information about integrated safety functions in drives can be found in the manuals for the respective products.

Power segment of the CPU 1518-4 PN/DP MFP

The CPU 1518-4 PN/DP MFP can be used for the high-end area of machine and plant automation.

The CPU 1518-4 PN/DP MFP offers you the following options:

- Executing STEP 7 blocks of the "standard" user program
- Executing applications that were programmed in C/C++ with the SDK Software Development Kit
  - Run C/C++ code synchronously in the CPU cycle via the CPU function library
  - Run C/C++ applications as separate applications parallel to CPU runtime

The CPU 1518-4 PN/DP MFP is suitable for:

- Complex protocol connections according to IEC 61850 and SECS/GEM
- Database connections, for example, SQL databases
- Data preprocessing for preparing complex data, for example, for management decisions
- Executing complex algorithms, for example, for optimizing processes

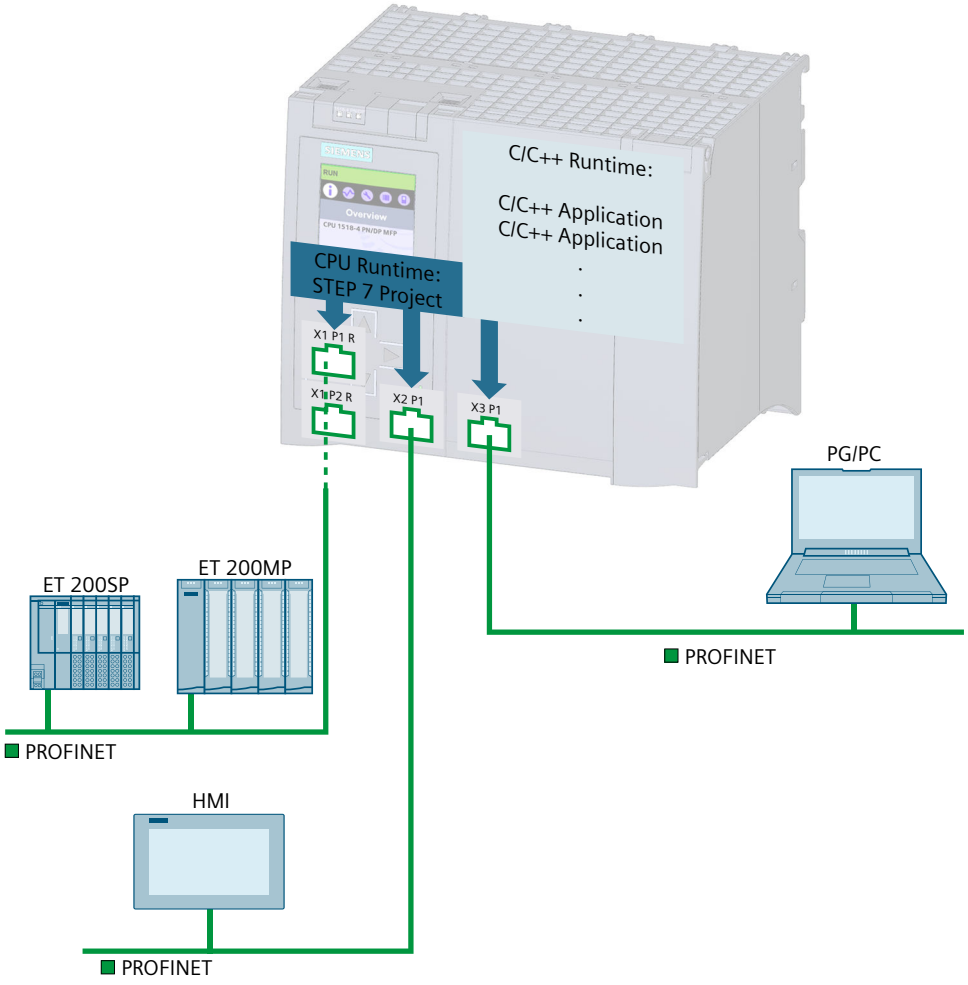


Figure 3-1 Overview of the performance segment

You create the C/C++ blocks (CPU function library for CPU Runtime) with the "Open Development Kit ODK 1500S" (ODK).

You can create the C/C++Runtime applications with the "Software Development Kit" (SDK).

Using the ODK and SDK provides you with the mechanisms of higher programming languages (e.g. object orientation) within a modern programming environment.

NOTE

To be able to use SIMATIC Industrial OS from firmware version V2.8.4 onwards, use the Open Development Kit 1500S Version V2.5 SP2 or higher. More information about the Open Development Kit 1500S Version V2.5 SP2 can be found on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109782540).

With ODK, you program:

- Blocks in C/C++ that can be run synchronously in the execution cycle of the CPU (CPU function library for CPU Runtime)

Article number	6ES7518-4AX00-1AB0
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	2 093 g

General technical specifications

You can find information on the general technical specifications, such as standards and approvals, electromagnetic compatibility, protection class, etc., in the S7-1500, ET 200MP (https://support.industry.siemens.com/cs/ww/en/view/59191792) system manual.

Dimensional drawing

A

This section contains the dimensional drawing of the module on the mounting rail, as well as a dimensional drawing with the front panel open. Keep to the dimensions when installing in cabinets, control rooms, etc.

Dimension drawings of the CPU 1518-4 PN/DP MFP

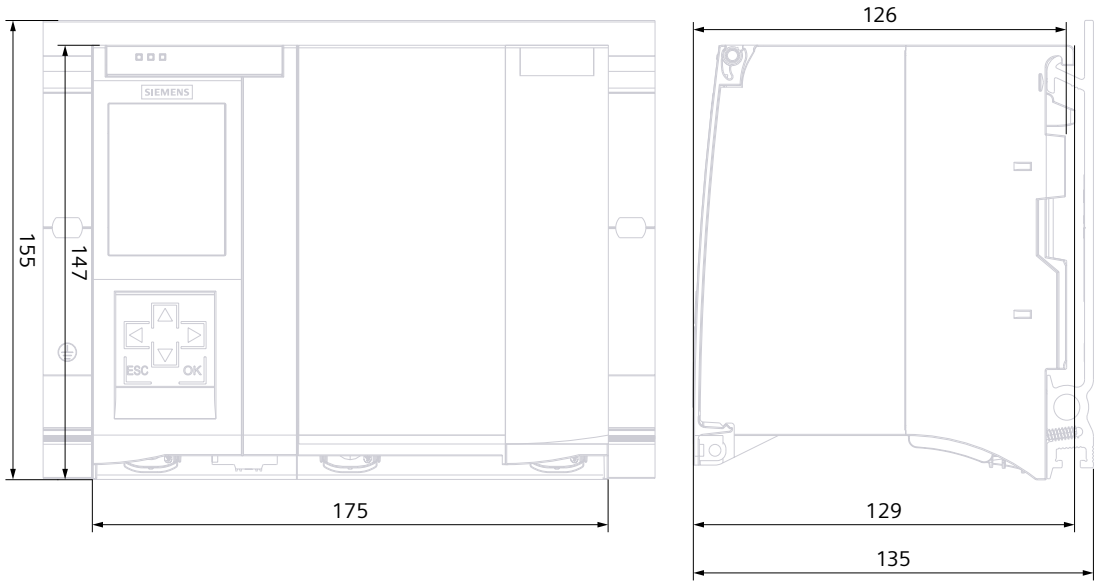


Figure A-1 Dimension drawing of the CPU 1518-4 PN/DP MFP, front and side view

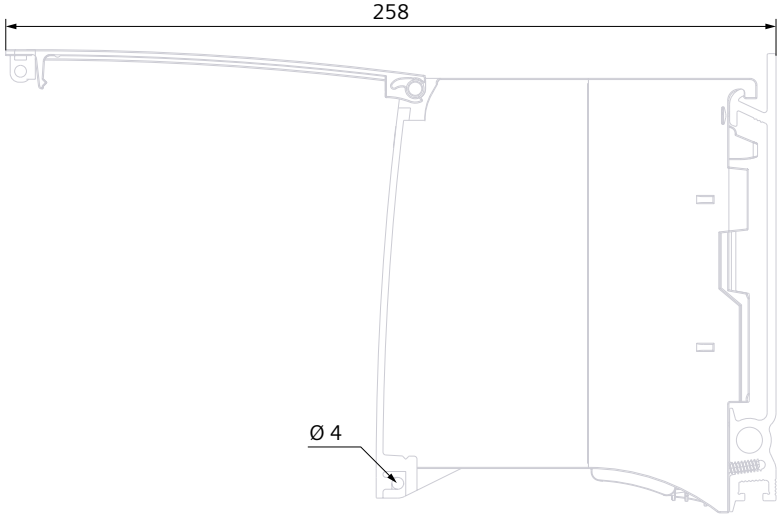


Figure A-2 Dimension drawing CPU 1518-4 PN/DP MFP, side view with open front panel