

6 Supplement to the Documentation

The accompanying disk contains the standard function blocks FB 100 and FB 101 for data exchange between the S5 CPUs and the IP 252.

The function blocks FB 100 and FB 101 use the data handling blocks ("SEND"; "RECEIVE", etc.). The following minimum requirements apply to the revision level of these data handling blocks (DHBs):

PLC	CPU	Operating System Software Release (Z)/ DHB Revision Level (A)
S5-115U	CPU 941 (6ES5 941-7UA12)	at least Z 10
	CPU 942 (6ES5 942-7UA12)	at least Z 04
	CPU 941 (6ES5 941-7UA13)	at least Z 01
	CPU 942 (6ES5 942-7UA13)	at least Z 01
	CPU 943 (6ES5 943-7UA13)	at least Z 03
	CPU 944 (6ES5 944-7UA13)	at least Z 01
	CPU 941 to 944 (6ES5 94?-7UB11)	at least Z 01
	CPU 945 (6ES5 945-7UA11/21)	at least Z 01
S5-135U	CPU 922, CPU 928	at least A 1
S5-155U	CPU 946, 947	at least A 4
	CPU 948	at least A 1

In the S5-115U programmable controller, the data handling blocks are located in the S5 CPU.

In the S5-135U and the S5-155U, the data handling blocks have to be referenced separately and loaded into the memory of the S5 CPU.

SIMATIC S5

S5-115U Programmable Controller

Manual

CPU 941-7UB11

CPU 942-7UB11

CPU 943-7UB11 and CPU 943-7UB21

CPU 944-7UB11 and CPU 944-7UB21

EWA 4NEB 811 6130-02b

Edition 04

A lithium battery backs up the program memory and the internal retentive flags, timers and counters in the event of a power failure. An LED signals battery failure. If you change the battery when the power is shut off, connect a back-up voltage from an outside source to the sockets provided for this purpose on the power supply module.

1.2.2 Central Processing Units

The central processing unit (CPU) is the "brain" of the programmable controller. It executes the control program. Choose from the following four CPUs, depending on the degree of performance your S5-115U must have:

CPU 941, CPU 942, CPU 943 and CPU 944.

The more powerful the CPU you choose, the shorter are your program execution times and the larger the user memory. You can use CPUs 941 to 944 also for PID control - in conjunction with analog modules and PID control software - since the operating systems in these CPUs contain integral PID control algorithms. Sampling times from 100 ms are possible for a PID control loop. You can implement up to eight PID control loops.

CPU 943 and CPU 944 (each with two serial interfaces) offer further possibilities for controlling the process thanks to their integral hardware clock.

1.2.3 Input and Output Modules

Input and output modules are the interfaces to the sensors and actuators of a machine or controlled system.

The following features make S5-115U modules easy to handle:

- fast installation
- mechanical coding
- large labeling areas

Digital Modules

Digital modules conform to the voltage and current levels of your machine. You do not have to adapt the existing level to the programmable controller. The S5-115U adapts itself to your machine.

Digital modules have the following convenient features:

- connection of signal lines via front connectors
- a choice of screw-type or crimp snap-in connections

Analog Modules

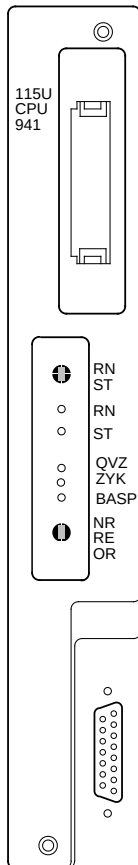
As a programmable controller's degree of performance increases, so does the significance of its analog value processing. The significance of the analog input and output modules increases accordingly.

Analog modules handle mainly closed-loop control tasks, such as automatic level, temperature, or speed control.

15.2.3 Central Processing Units

Central Processing Unit CPU 941

(6ES5 941-7UB11)



Technical Specifications

Memory capacity (total)	maximum	9216 statements ¹
- internal memory	maximum	1024 statements ¹
- memory submodule (RAM)	maximum	8192 statements ¹
- memory submodule (EPROM)	maximum	8192 statements ¹
- memory submodule (EEPROM)	maximum	8192 statements ¹
Execution time		
- per binary operation	approx.	2.2 µsec.
- per word operation	approx.	60 to 200 µsec.
Scan time monitoring	approx.	500 msec. (can be modified)
Flags		2048; optionally half or all retentive ²
Timers		
- number		128; optionally half or all retentive ²
- range		0.01 to 9990 sec.
Counters		
- number		128; optionally half or all retentive ²
- range		0 to 999 (up, down)
Digital inputs		
Digital outputs - total	maximum	2048
Analog inputs		
Analog outputs - total	maximum	128
Organization blocks	maximum	256
Program blocks	maximum	256
Function blocks	maximum	256 (can be assigned parameters)
Sequence blocks	maximum	256
Data blocks	maximum	254
Operations set	approx.	170 operations
Required backup current from the backup battery at power off		
- internal RAM	approx.	100 µA
- RAM submodule	approx.	200 µA
Current consumption		
- from 5 V (internal)		0.16 A
- from 24 V (without programmer)		0.04 A
- from 24 V (with programmer)		0.06 A
Power losses of the module		
- with programmer	typically	2 W
	typically	2.5 W
Weight	approx.	0.8 kg (1.76 lb.)

¹ A statement usually takes up two bytes in the program memory.

² Use back-up battery for retentive feature.