Siemens 6ES7412-2XJ05-0AB0

01 CPU Module

Siemens 6ES7412-2XJ05-0AB0 coordinates the user program, rack I/O and distributed PROFIBUS stations within an engineered S7-400 system.

1 Installed circuit — 2 Product interface — 3 Siemens 6ES7412-2XJ05-0AB0 — 4 System response

CPU 412-2 controller with code and data memory

Siemens 6ES7412-2XJ05-0AB0 provides separate 256 KB work-memory areas for code and data, together with 512 KB of integrated RAM load memory. FLASH or RAM memory cards can expand load memory up to 64 MB. The referenced firmware V5.3 execution supports STEP 7 V5.3 SP2 with the appropriate hardware update. Battery-backed retention covers work and load memory; retention must therefore be reviewed with the installed S7-400 power-supply and backup arrangement.

Electrical or system behavior

The CPU integrates two electrically isolated RS-485 interfaces. The first supports MPI or PROFIBUS DP and the second supports PROFIBUS DP, with transmission rates up to 12 Mbit/s. In DP master mode, the first interface supports up to 32 slaves and the second up to 64, subject to their separate address limits. The total I/O address area is 4 KB inputs and 4 KB outputs, and the process image can be configured within that capacity.

Controlled exchange and acceptance

Typical execution times are 75 ns for bit, word and fixed-point operations and 225 ns for floating-point operations. A configurable diagnostic buffer supports up to 400 entries, helping maintenance teams correlate faults with CPU operation. The CPU draws typically 0.9 A and at most 1.1 A from the 5 V S7-400 backplane supply; typical power loss is 4.5 W. Expansion racks, communication processors and configured functions must be checked as a complete station rather than inferred from the CPU order number alone.

The selected original manufacturer pages cover the 6ES7412-2XJ05-0AB0 type or its specified family. Family ratings apply only under their stated configuration and test conditions.

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02 Ratings, interfaces and applicable limits

CPU designation	CPU 412-2
Work memory	256 KB code + 256 KB data
Integrated load memory	512 KB RAM
Expandable load memory	FLASH or RAM card, up to 64 MB
First interface	MPI / PROFIBUS DP; up to 12 Mbit/s
Second interface	PROFIBUS DP; up to 12 Mbit/s
DP slaves, first / second interface	32 / 64 maximum; address limits apply
Total I/O address area	4 KB inputs / 4 KB outputs
5 V backplane current	0.9 A typical; 1.1 A maximum
Typical power loss	4.5 W
Typical bit-operation time	75 ns
Diagnostic buffer	400 entries maximum; configurable
Reference firmware	V5.3

Configuration-specific engineering data

Expandable load memory	FLASH or RAM card, up to 64 MB
First interface	MPI / PROFIBUS DP; up to 12 Mbit/s
Second interface	PROFIBUS DP; up to 12 Mbit/s
DP slaves, first / second interface	32 / 64 maximum; address limits apply
Total I/O address area	4 KB inputs / 4 KB outputs

Applying these values to the complete installation

The selected original manufacturer pages cover the 6ES7412-2XJ05-0AB0 type or its specified family. Family ratings apply only under their stated configuration and test conditions. System relationship: Check S7-400 rack compatibility, backplane loading, power-supply backup battery and the installed expansion configuration. Configuration boundary: CPU 412-2 data applies to 6ES7412-2XJ05-0AB0 with the specified firmware; network limits depend on the selected interface and configuration. Technical reference: Siemens S7-400 Automation System, CPU Specifications, A5E00850746-08,

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03 Application decisions and system boundaries

01 Rack control

Execute the configured S7-400 program.

02 PROFIBUS DP

Coordinate decentralized I/O network assignments.

03 MPI service

Use the engineering link for diagnostics.

04 CPU exchange

Restore load memory and rack configuration.

Technical boundary

System relationship: Check S7-400 rack compatibility, backplane loading, power-supply backup battery and the installed expansion configuration. Configuration boundary: CPU 412-2 data applies to 6ES7412-2XJ05-0AB0 with the specified firmware; network limits depend on the selected interface and configuration. Technical reference: Siemens S7-400 Automation System, CPU Specifications, A5E00850746-08,

Configuration

Retain the installed 6ES7412-2XJ05-0AB0 terminal, supply and controller assignments.

Acceptance

Document power, diagnostics and controlled functional response before release.

Replacement boundary: Compare the complete 6ES7412-2XJ05-0AB0 marking, electrical connections and supporting components before substitution.

Siemens 6ES7412-2XJ05-0AB0

04 Eight questions beyond the specification table

1 What CPU is Siemens 6ES7412-2XJ05-0AB0?

It is the SIMATIC S7-400 CPU 412-2 with integrated MPI/DP and PROFIBUS DP interfaces.

2 How is work memory divided in 6ES7412-2XJ05-0AB0?

The CPU provides 256 KB for program code and 256 KB for data. These are separate work-memory areas.

3 How can load memory be expanded on 6ES7412-2XJ05-0AB0?

It includes 512 KB RAM load memory and supports FLASH or RAM memory cards up to 64 MB.

4 How many DP slaves can 6ES7412-2XJ05-0AB0 support?

The first DP interface supports up to 32 slaves and the second up to 64. Interface address capacities and per-slave data limits also apply.

5 Does 6ES7412-2XJ05-0AB0 have an integrated Ethernet port?

Its integrated interfaces are MPI/DP and PROFIBUS DP. Ethernet or PROFINET functions require appropriate separately configured communication hardware.

6 What backplane current does 6ES7412-2XJ05-0AB0 draw?

Consumption from the 5 V S7-400 backplane is typically 0.9 A and at most 1.1 A. Interface-connected devices have separate supply-loading limits.

7 How does 6ES7412-2XJ05-0AB0 retain data after power loss?

The referenced configuration uses battery-backed buffering. With a backup battery, work and load memory are retained; without battery buffering, those RAM data are not retained.

8 What diagnostic buffer is available in 6ES7412-2XJ05-0AB0?

The buffer is configurable up to 400 entries, with 120 entries as the reference default. Review the fitted configuration when comparing event history.

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05 Selection boundary and service reference

Identify the offered assembly

CPU 412-2 controller with code and data memory. Request photos of the offered 6ES7412-2XJ05-0AB0 and confirm companion hardware and scope in the quotation.

Lifecycle and replacement assessment

The current production phase of 6ES7412-2XJ05-0AB0 is not established by the selected technical pages; retain the installed configuration for service planning. Compare the complete 6ES7412-2XJ05-0AB0 marking, electrical connections and supporting components before substitution.

Companion equipment and scope

Confirm controller, terminal base, companion cable and protective components. A related product is not an automatic substitute; assess the installed interface and application requirements independently.

Engineering handover

Document power, diagnostics and controlled functional response before release. Retain the complete hardware identities, approved configuration and accepted test outcome with the installation record.

Related product references

Siemens 6ES7318-3EL01-0AB0

Siemens 6ES7151-8AB01-0AB0

Siemens 6ES7132-4HB01-0AB0

Technical basis: Siemens SIMATIC S7-400 CPU Specifications, CPU 412-2. Apter Power technical synthesis for this product configuration.