Siemens 6ES5451-4UA12

01 Digital Output Module / system role

Product function

Siemens 6ES5451-4UA12 connects the S5 output image to DC actuators while separating the backplane logic interface from the floating field-output group.

Selected configuration

The output stage is intended for DC loads such as contactors and solenoids. Although each output is current limited, the total current and fuse arrangement must also be evaluated for its eight-channel group.

Integration checkpoints

- DC solenoid control
- Contactor command
- Grouped output maintenance
- Legacy rack restoration

Fault localization	Short-circuit indication by eight-output group
Service interface	Enable input with selectable operating behavior
Load selection	Distinct resistive, inductive and lamp switching limits

The enable circuit affects how the module participates in the system. The -4UA12 version includes an enable-mode selection; preserve its actual setting and the associated field wiring when replacing an installed module.

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02 Technical operating envelope

Digital outputs	32
Field supply range	20–30 V DC
Output current	5 mA to 0.5 A
Total current per eight outputs	4 A maximum
Group fuse	6.3 A slow, one per eight outputs

Off-state leakage	0.5 mA maximum
Resistive switching frequency	100 Hz maximum
Lamp load	5 W maximum
Backplane consumption	5 V, 120 mA typical

Ratings apply to the stated hardware execution and operating conditions; companion hardware and configured functions require separate compatibility checks.

Thermal diversity

Without forced ventilation, simultaneous-load diversity is reduced above 35 °C. Assess the cabinet conditions and aggregate output loading instead of relying solely on the individual-channel rating.

Inductive switching

The permitted inductive switching rate decreases with load current. Use the actual coil current and suppression arrangement in the switching-duty assessment.

Group fault response

A short-circuit indication identifies an output group. Isolate and investigate its field circuits before replacing the module or increasing protection ratings.

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03 System integration and applications

DC solenoid control

Switch approved DC actuator circuits from the S5 output map.

Contactor command

Drive coils within the inductive switching-duty limits.

Grouped output maintenance

Locate faults using the eight-channel indication and fuse arrangement.

Legacy rack restoration

Retain module address and enable behavior in an existing S5 installation.

Application and compatibility boundary

Load type changes the permissible switching frequency. Inductive energy, lamp inrush and cabinet cooling must be evaluated against their respective limits, followed by a controlled channel-by-channel output test.

Available unit verification

Check the enable-mode jumper, front connector coding and output-group fuses. Confirm output module, front connector and any separately quoted wiring accessories in the quotation. Evaluate the actual interfaces and included accessories against the installed arrangement.

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04 Engineering selection decisions

Why can 6ES5451-4UA12 overheat even when no individual output exceeds its rated current?

Group totals and simultaneous-load diversity still apply. Evaluate cabinet cooling and the number of energized outputs, especially without forced ventilation above 35 °C.

How does an inductive load affect the switching duty of 6ES5451-4UA12?

The permitted rate is lower than for a resistive load and depends on coil current. Assess the actual coil and suppression circuit rather than using the resistive switching limit.

What does a group short-circuit indication on 6ES5451-4UA12 help isolate?

It narrows the investigation to a group of eight outputs. Check the affected wiring, load and fuse before concluding that the entire module has failed.

Why should the enable-mode jumper on 6ES5451-4UA12 be photographed before removal?

Its setting changes the enable-input behavior. Retaining the installed setting prevents a replacement from behaving differently despite identical output wiring.

Can a lamp circuit be selected for 6ES5451-4UA12 using steady-state current alone?

No. Lamp inrush and the separate lamp-load rating must be considered in addition to the steady-state current.

Does current limiting on 6ES5451-4UA12 replace the specified group fusing?

No. Current limiting and group fuses serve different functions. Preserve the specified protection arrangement and investigate the cause of a blown fuse.

How can an apparently inactive output on 6ES5451-4UA12 still influence a sensitive load?

The off-state has finite leakage. Confirm that the load remains positively released at the permitted leakage level rather than treating an off command as an open circuit.

What should be checked when all outputs on 6ES5451-4UA12 remain inactive but the CPU is running?

Check field supply, group protection, enable wiring and the selected address before changing the program. A running CPU alone does not establish a healthy field-output path.

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05 Configuration boundary and references

Lifecycle and support

The current manufacturing and manufacturer-support stage for this exact model is not confirmed.

Replacement assessment

Match the -4UA12 execution, output addressing, enable-mode jumper and fuse grouping before substituting a module.

Available unit details

Offered reference: Siemens 6ES5451-4UA12. Condition: New, original product. Check the enable-mode jumper, front connector coding and output-group fuses. Confirm output module, front connector and any separately quoted wiring accessories in the quotation; companion equipment is included only when itemized.

Document roles: The original excerpt retains manufacturer tables and drawings; this brief addresses selection and system context; the separate installation guide covers field procedures and acceptance.

Technical basis: SIMATIC S5 U Peripheral Equipment, Digital Modules.

Related product navigation

- Siemens 6ES7153-2BA02-0XB0
- Siemens 6ES7321-1BL00-0AA0
- Siemens 6ES7332-8TF01-0AB0

Related products for separate application assessment; verify the platform and interface. No interchangeability is implied.

Product enquiries