

Siemens 6ES7961-2AA00-0AC0

Analog I/O Submodule

Product scope

- Combines four flexible measurement channels with two programmable analog command outputs.
- Offers selectable conversion cycles for fast acquisition or improved interference rejection.
- Supports diagnostic and hardware interrupts for time-sensitive analog processing.

Manufacturer source

Exact-model technical record

Verified model-specific overview, function, operating principle, applications and technical data.

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Siemens 6ES7961-2AA00-0AC0

Analog I/O Submodule

Product overview

Siemens 6ES7961-2AA00-0AC0 is the SIMATIC M7 IF 961-AIO submodule with four universal analog inputs and two analog outputs. It handles voltage, current, resistance and transducer signals through a 25-pin interface.

6ES7961-2AA00-0AC0 digitizes four bipolar analog channels with 16-bit representation and supplies two 12-bit bipolar output channels. The input section supports voltage, current, two-wire or four-wire transmitter and resistance configurations.

Multiple conversion-cycle choices allow the application to trade measurement speed against noise rejection. Hardware and diagnostic interrupt functions can notify the automation program without waiting for a routine software scan.

Channel range, wiring method, conversion time and common-mode conditions must be copied from the M7 project before replacement. Only shielded analog cabling should be used, with the documented separation from disturbing conductors.

Technical specifications

Analog inputs	4
Analog outputs	2
Input representation	16-bit bipolar two's complement
Output resolution	12-bit bipolar
Voltage input range	± 10 V
Voltage input impedance	100 k Ω
Current input range	± 20 mA
Current shunt	50 Ω
Voltage output range	± 10 V
Current output range	± 20 mA
Voltage-output minimum load	2 k Ω
Current-output maximum load	500 Ω
Maximum capacitive load	1.6 μ F
Input conversion options	35 ms/channel or selectable cycle modes
Fast cycle choices	5.7 ms, 2.8 ms, 1.3 ms and 600 μ s
High-rejection cycle	185 ms
Operating error	$\pm 0.8\%$ for voltage or current
Basic error	$\pm 0.7\%$
Linearity error	$\pm 0.05\%$
Repeatability	$\pm 0.2\%$
Crosstalk attenuation	Greater than 60 dB
Connector	25-pin D-sub
Load supply	24 V DC, approximately 150 mA
Submodule identifier	01H
Power loss	2.5 W

6ES7961-2AA00-0AC0 function and operating principle

Ordered configuration

This ordering configuration is the IF 961-AIO mixed analog interface identified by code 01H.

System role

It connects low-level process measurements and analog references directly to the M7 automation program.

Selection and installation

The saved channel type, measuring range and shield termination are essential because voltage and current wiring are not interchangeable.

Functional path

- Combines four flexible measurement channels with two programmable analog command outputs.
- Offers selectable conversion cycles for fast acquisition or improved interference rejection.
- Supports diagnostic and hardware interrupts for time-sensitive analog processing.

Application scenarios

- Test benches can acquire four transducer values while generating two analog setpoints from the same submodule.
- Process skids use the universal inputs for transmitter, voltage or resistance measurements selected by software.
- Motion or drive supervision can combine analog feedback with command references inside an M7 real-time application.

6ES7961-2AA00-0AC0 engineering checks

Performance & Efficiency

- The input converter uses 16-bit bipolar representation for signed process values.
- Selectable cycle times range from fast sub-millisecond acquisition to a 185 ms high-rejection mode.
- Published operating error for voltage and current ranges is within ± 0.8 percent under stated conditions.

Diagnostics

- Diagnostic interrupts report channel or parameter conditions to the automation program.
- Voltage and current inputs have separate destruction limits that must not be exceeded during commissioning.
- Short-circuit current on a voltage output is limited to approximately 40 mA.

Installation & Integration

- All analog wiring is routed through the specified 25-pin D-sub connector.
- Shielded signal cable is required, with a documented maximum route of 200 m.
- The external 24 V load supply must be present with correct polarity before the output section is used.

Critical technical note

Do not energize 6ES7961-2AA00-0AC0 until every channel range and two-wire, four-wire or resistance connection has been verified.

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