

**Siemens
EcoTech**



SIMATIC S7-1500, analog output module AQ 4xU/I ST, 16-bit resolution accuracy 0.3%. 4 channels in groups of 4, diagnostics; substitute value; the module supports the safety-oriented shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 2 / PL c according to EN ISO 13849-1:2015. delivery including infeed element, shielding bracket and shield terminal: front connector (screw terminals or push-in) to be ordered separately

General information	
Product type designation	AQ 4xU/I ST
HW functional status	from FS04
Firmware version	V2.2.0
• FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
• Prioritized startup	No
• Output range scalable	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V12 / V12
• STEP 7 configurable/integrated from version	V5.5 SP3 / -
• PROFIBUS from GSD version/GSD revision	V1.0 / V5.1
• PROFINET from GSD version/GSD revision	V2.3 / -
Operating mode	
• Oversampling	No
• MSO	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, max.	190 mA; with 24 V DC supply
Power	
Power consumption from the backplane bus	0.6 W
Power loss	
Power loss, typ.	4 W
Analog outputs	
Number of analog outputs	4
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	24 mA
Current output, no-load voltage, max.	22 V

Cycle time (all channels), min.	3.2 ms; independent of number of activated channels
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -5 V to +5 V	No
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 k Ω ; 0.5 k Ω m at 1 to 5 V
• with voltage outputs, capacitive load, max.	1 μ F
• with current outputs, max.	750 Ω
• with current outputs, inductive load, max.	10 mH
Cable length	
• shielded, max.	800 m; for current, 200 m for voltage
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Conversion time (per channel)	0.5 ms
Settling time	
• for resistive load	1.5 ms
• for capacitive load	2.5 ms
• for inductive load	2.5 ms
Errors/accuracies	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.002 %/K
Crosstalk between the outputs, max.	-100 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
note regarding accuracy	at temperatures below 0 °C, the figures for operating error and temperature error are doubled
Operational error limit in overall temperature range	
• Voltage, relative to output range, (+/-)	0.3 %
• Current, relative to output range, (+/-)	0.3 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.2 %
• Current, relative to output range, (+/-)	0.2 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Only for output type "current"
• Short-circuit	Yes; Only for output type "voltage"
• Overflow/underflow	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED

• for module diagnostics		Yes; red LED	
Potential separation			
Potential separation channels			
• between the channels		No	
• between the channels, in groups of		4	
• between the channels and backplane bus		Yes	
• Between the channels and load voltage L+		Yes	
Permissible potential difference			
between S- and MANA (UCM)		8 V DC	
Isolation			
Isolation tested with		707 V DC (type test)	
Standards, approvals, certificates			
Siemens Eco Profile (SEP)		Siemens EcoTech	
Suitable for safety-related tripping of standard modules		Yes; From FS05	
Ecological footprint			
• environmental product declaration		Yes	
Global warming potential			
— global warming potential, (total) [CO2 eq]		37.6 kg	
— global warming potential, (during production) [CO2 eq]		11.1 kg	
— global warming potential, (during operation) [CO2 eq]		26.8 kg	
— global warming potential, (after end of life cycle) [CO2 eq]		-0.364 kg	
Highest safety class achievable for safety-related tripping of standard modules			
• Performance level according to ISO 13849-1		PL d	
• Category according to ISO 13849-1		Cat. 3	
• SIL acc. to IEC 62061		SIL 2	
• remark on safety-oriented shutdown		https://support.industry.siemens.com/cs/de/en/view/39198632	
product functions / security / header			
signed firmware update		No	
data integrity		No	
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.		-30 °C; From FS06	
• horizontal installation, max.		60 °C	
• vertical installation, min.		-30 °C; From FS06	
• vertical installation, max.		40 °C	
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.		5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	
Dimensions			
Width		35 mm	
Height		147 mm	
Depth		129 mm	
Weights			
Weight, approx.		310 g	
Classifications			
		Version	Classification
	eClass	14	27-24-22-01
	eClass	12	27-24-22-01
	eClass	9.1	27-24-22-01
	eClass	9	27-24-22-01
	eClass	8	27-24-22-01
	eClass	7.1	27-24-22-01
	eClass	6	27-24-22-01
	ETIM	9	EC001420
	ETIM	8	EC001420
	ETIM	7	EC001420
	IDEA	4	3562

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)[Metrological Approval](#)[KC](#)

General Product Approval

For use in hazardous locations

[FM](#)[FM](#)[CCC-Ex](#)

For use in hazardous locations

Marine / Shipping

[Type Examination Certificate](#)[Miscellaneous](#)

Marine / Shipping

[NK / Nippon Kaiji Kyokai](#)[CCS \(China Classification Society\)](#)

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Environment

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