

Siemens  
EcoTech



SIMATIC S7-1500, analog output module AQ 4xU/I HF, 16-bit resolution accuracy 0.1%, 4 channels in groups of 1, common mode voltage: 30 V AC/60 V DC, diagnostics; substitute value, isochronous mode; the module supports the safety-oriented shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d 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 HF
HW functional status	From FS01
Firmware version	V1.1.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Prioritized startup</li> </ul>	Yes
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V14 / -
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
<ul style="list-style-type: none"> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	V1.0 / V5.1
<ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>	V2.3 / -
Operating mode	
<ul style="list-style-type: none"> <li>Oversampling</li> </ul>	No
<ul style="list-style-type: none"> <li>MSO</li> </ul>	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)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, max.	160 mA; with 24 V DC supply
Power	
Power consumption from the backplane bus	0.95 W
Power loss	
Power loss, typ.	5 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.	125 µs; independent of number of activated channels

<b>Output ranges, voltage</b>	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -5 V to +5 V	No
• -10 V to +10 V	Yes
<b>Output ranges, current</b>	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
<b>Connection of actuators</b>	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes
<b>Load impedance (in rated range of output)</b>	
• with voltage outputs, min.	1 k $\Omega$ ; 0.5 k $\Omega$ m at 1 to 5 V
• with voltage outputs, capacitive load, max.	1 $\mu$ F
• with current outputs, max.	750 $\Omega$
• with current outputs, inductive load, max.	10 mH
<b>Cable length</b>	
• shielded, max.	800 m; for current, 200 m for voltage
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	16 bit
• Conversion time (per channel)	125 $\mu$ s; independent of number of activated channels
<b>Settling time</b>	
• for resistive load	0.2 ms; see additional description in the manual
• for capacitive load	1.8 ms; see additional description in the manual
• for inductive load	2 ms; see additional description in the manual
<b>Errors/accuracies</b>	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.015 %
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), (+/-)	0.005 %
<b>Operational error limit in overall temperature range</b>	
• Voltage, relative to output range, (+/-)	$\pm$ 10 V; 0 V to 10 V: $\pm$ 0.12%; 1 V to 5 V: $\pm$ 0.1%
• Current, relative to output range, (+/-)	$\pm$ 20 mA; 0 mA to 20 mA: $\pm$ 0.2%; 4 mA to 20 mA: $\pm$ 0.12%
<b>Basic error limit (operational limit at 25 °C)</b>	
• Voltage, relative to output range, (+/-)	0.06 %
• Current, relative to output range, (+/-)	0.1 %
<b>Isochronous mode</b>	
Execution and activation time (TCO), min.	100 $\mu$ s
Bus cycle time (TDP), min.	250 $\mu$ s
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
Substitute values connectable	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Diagnoses</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Only for output type "current"
• Short-circuit	Yes; Only for output type "voltage"
• Overflow/underflow	Yes
<b>Diagnostics indication LED</b>	
• 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	
<b>Potential separation</b>		
Potential separation channels		
• between the channels	Yes	
• between the channels, in groups of	1	
• between the channels and backplane bus	Yes	
• Between the channels and load voltage L+	Yes	
<b>Permissible potential difference</b>		
between different circuits	60 V DC/30 V AC; insulation rated for 120 V AC basic insulation: between the channels and the supply voltage L+; between the channels and the backplane bus; between the channels	
<b>Isolation</b>		
Isolation tested with	2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus	
<b>Standards, approvals, certificates</b>		
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	
<b>product functions / security / header</b>		
signed firmware update	No	
data integrity	No	
<b>Ambient conditions</b>		
Ambient temperature during operation		
• horizontal installation, min.	-25 °C; From FS02	
• horizontal installation, max.	60 °C	
• vertical installation, min.	-25 °C; From FS02	
• vertical installation, max.	40 °C	
<b>Dimensions</b>		
Width	35 mm	
Height	147 mm	
Depth	129 mm	
<b>Weights</b>		
Weight, approx.	300 g	
<b>Classifications</b>		
	<b>Version</b>	<b>Classification</b>
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
UNSPSC	15	32-15-17-05
<b>Approvals / Certificates</b>		
General Product Approval	For use in hazardous locations	



[KC](#)



[EM](#)

For use in hazardous locations



[EM](#)

[CCC-Ex](#)



[Type Examination Certificate](#)



For use in hazardous locations

Marine / Shipping

[Miscellaneous](#)



[NK / Nippon Kaiji Kyokai](#)

Marine / Shipping

Environment



[CCS \(China Classification Society\)](#)



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