



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  |
| <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>                                       | No  |
| <ul style="list-style-type: none"> <li>Prioritized startup</li> </ul>                                    | No  |
| <ul style="list-style-type: none"> <li>Output range scalable</li> </ul>                                  | No  |
| Engineering with   |   |
| <ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul> | V12 / V12   |
| <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)  | 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   |
| <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 $\Omega$ hm 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)  | 0.5 ms  |
| <b>Settling time</b>   |   |
| • for resistive load   | 1.5 ms  |
| • for capacitive load  | 2.5 ms  |
| • for inductive load   | 2.5 ms  |
| <b>Errors/accuracies</b>   |   |
| 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 |
| <b>Operational error limit in overall temperature range</b>                |   |
| • Voltage, relative to output range, (+/-)                                 | 0.3 %   |
| • Current, relative to output range, (+/-)                                 | 0.3 %   |
| <b>Basic error limit (operational limit at 25 °C)</b>                      |   |
| • Voltage, relative to output range, (+/-)                                 | 0.2 %   |
| • Current, relative to output range, (+/-)                                 | 0.2 %   |
| <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  |

| 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  | <a href="https://support.industry.siemens.com/cs/de/en/view/39198632">https://support.industry.siemens.com/cs/de/en/view/39198632</a> |                       |
| Security  |   |                       |
| 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   |   |                       |
|   | <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  | 10  | EC001420              |
| ETIM  | 9   | EC001420              |
| ETIM  | 8   | EC001420              |

|        |    |             |
|--------|----|-------------|
| ETIM   | 7  | EC001420    |
| IDEA   | 4  | 3562        |
| UNSPSC | 15 | 32-15-17-05 |

Approvals / Certificates

General Product Approval



[China RoHS](#)



[Declaration of Conformity](#)

General Product Approval      EMV      For use in hazardous locations



[Declaration of Conformity](#)



[TUEV](#)



For use in hazardous locations      Test Certificates      Maritime application



[EM](#)

[CCC-Ex](#)

[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



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