




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 | |
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| Product type designation | AQ 4xU/I ST |
| HW functional status | from FS04 |
| Firmware version | V2.2.0 |
| <ul style="list-style-type: none"> FW update possible | Yes |
| Product function | |
| <ul style="list-style-type: none"> I&M data | Yes; I&M0 to I&M3 |
| <ul style="list-style-type: none"> Isochronous mode | No |
| <ul style="list-style-type: none"> Prioritized startup | No |
| <ul style="list-style-type: none"> Output range scalable | No |
| Engineering with | |
| <ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version | V12 / V12 |
| <ul style="list-style-type: none"> STEP 7 configurable/integrated from version | V5.5 SP3 / - |
| <ul style="list-style-type: none"> PROFIBUS from GSD version/GSD revision | V1.0 / V5.1 |
| <ul style="list-style-type: none"> PROFINET from GSD version/GSD revision | V2.3 / - |
| Operating mode | |
| <ul style="list-style-type: none"> Oversampling | No |
| <ul style="list-style-type: none"> 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 available 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 |

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| 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 |

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| • 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 | |
| Suitable for safety-related tripping of standard modules | Yes; From FS05 |
| 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 |
| 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 |
| last modified: | 3/3/2022  |