

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: 30V AC/60V DC, diagnostics; Substitute value Isochronous mode incl. infeed element, Shield bracket and shield terminal



| General information                                       |                   |
|---|-------------------|
| Product type designation                                  | AQ 4xU/I HF       |
| HW functional status                                      | FS01              |
| Firmware version  | V1.1.0            |
| • FW update possible                                      | Yes               |
| Product function  |                   |
| • I&M data  | Yes; I&M0 to I&M3 |
| Engineering with  |                   |
| • STEP 7 TIA Portal configurable/integrated as of version | V14 / -           |
| • STEP 7 configurable/integrated as of version            | V5.5 SP3 / -      |
| • PROFIBUS as of GSD version/GSD revision                 | V1.0 / V5.1       |
| • PROFINET as of GSD version/GSD revision                 | V2.3 / -          |
| Operating mode  |                   |
| • Oversampling  | No                |
| • MSO   | Yes               |
| CiR – Configuration in RUN                                |                   |
| Reparameterization possible in RUN                        | Yes               |

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|--|---|
| Calibration possible in RUN                      | Yes   |
| <b>Supply voltage</b>                            |   |
| Type of supply voltage                           | DC  |
| 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   |
| <b>Input current</b>                             |   |
| Current consumption, max.                        | 160 mA; with 24 V DC supply                         |
| <b>Power</b>                                     |   |
| Power available from the backplane bus           | 0.95 W  |
| <b>Power loss</b>                                |   |
| Power loss, typ.                                 | 5 W   |
| <b>Analog outputs</b>                            |   |
| 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 kΩ; 0.5 kΩ at 1 to 5 V                            |
| • with voltage outputs, capacitive load, max.    | 1 µF  |
| • with current outputs, max.                     | 750 Ω   |
| • 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>   |   |

|  |   |
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| <b>Integration and conversion time/resolution per channel</b>              |   |
| • Resolution with overrange (bit including sign), max.                     | 16 bit  |
| • Conversion time (per channel)  | 125 µs; 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, (+/-)                                 | ±10 V; 0 V to 10 V: ±0.12%; 1 V to 5 V: ±0.1%       |
| • Current, relative to output range, (+/-)                                 | ±20 mA; 0 mA to 20 mA: ±0.2%; 4 mA to 20 mA: ±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>  |   |
| Isochronous operation (application synchronized up to terminal)            | Yes   |
| Execution and activation time (TCO), min.                                  | 100 µs  |
| Bus cycle time (TDP), min.   | 250 µs  |
| <b>Interrupts/diagnostics/status information</b>                           |   |
| Diagnostics function   | Yes   |
| Substitute values connectable  | Yes   |
| <b>Alarms</b>  |   |
| • Diagnostic alarm   | Yes   |
| <b>Diagnostic messages</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
- for module diagnostics

Yes; Red LED

Yes; Red LED

## Potential separation

### Potential separation channels

- between the channels
- between the channels, in groups of
- between the channels and backplane bus
- Between the channels and load voltage L+

Yes

1

Yes

Yes

## Permissible potential difference

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

## Isolation

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

## Decentralized operation

Prioritized startup

Yes

## Dimensions

Width

35 mm

Height

147 mm

Depth

129 mm

## Weights

Weight, approx.

300 g

**last modified:**

08/16/2018