



SIMATIC S7-1500, ANALOG OUTPUT MODULE AQ 4 X U/I HF, 16 BITS OF RESOLUTION, ACCURACY 0.1%, 4 CHANNELS IN GROUPS OF 1; COMMON MODE VOLTAGE: 30V AC/60V DC, DIAGNOSIS, SUBSTITUTE VALUE INCL. INFEEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL

General information	
Product type designation	AQ 4xU/I HF
HW functional status	FS01
Firmware version	V1.0.0
• 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	V13 SP1 / V14
• STEP 7 configurable/integrated as of version	V5.5 SP3 / V5.5 SP4
• 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

Calibration possible in RUN	No
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 available 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 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
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -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 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
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)	125 µs; independent of number of activated channels
Settling time	
• 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
Errors/accuracies	
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 %
Operational error limit in overall temperature range	
• 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%
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.06 %
• Current, relative to output range, (+/-)	0.1 %
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• 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	Yes

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

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:

08.06.2016