

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 ISOCHRON MODE, INCL. INFEEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL



General information	
Product type designation	AQ 4xU/I HF
HW functional status	FS01
Firmware version	V1.1.0
<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
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated as of version 	V14 / -
<ul style="list-style-type: none"> STEP 7 configurable/integrated as of version 	V5.5 SP3 / -
<ul style="list-style-type: none"> PROFIBUS as of GSD version/GSD revision 	V1.0 / V5.1
<ul style="list-style-type: none"> PROFINET as of 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)	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 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
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 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	

<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. 	16 bit
<ul style="list-style-type: none"> Conversion time (per channel) 	125 µs; independent of number of activated channels
Settling time	
<ul style="list-style-type: none"> for resistive load 	0.2 ms; see additional description in the manual
<ul style="list-style-type: none"> for capacitive load 	1.8 ms; see additional description in the manual
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Voltage, relative to output range, (+/-) 	±10 V; 0 V to 10 V: ±0.12%; 1 V to 5 V: ±0.1%
<ul style="list-style-type: none"> 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)	
<ul style="list-style-type: none"> Voltage, relative to output range, (+/-) 	0.06 %
<ul style="list-style-type: none"> Current, relative to output range, (+/-) 	0.1 %
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Execution and activation time (TCO), min.	100 µs
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes
Diagnostic messages	
<ul style="list-style-type: none"> Monitoring the supply voltage 	Yes
<ul style="list-style-type: none"> Wire-break 	Yes; Only for output type "current"
<ul style="list-style-type: none"> Short-circuit 	Yes; Only for output type "voltage"
<ul style="list-style-type: none"> Overflow/underflow 	Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> RUN LED 	Yes; Green LED
<ul style="list-style-type: none"> ERROR LED 	Yes; Red LED
<ul style="list-style-type: none"> Monitoring of the supply voltage (PWR-LED) 	Yes; Green LED
<ul style="list-style-type: none"> Channel status display 	Yes; Green LED
<ul style="list-style-type: none"> for channel diagnostics 	Yes; Red LED

- for module diagnostics

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

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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:

12/07/2016