



SIMATIC S7-1500, ANALOG OUTPUT MODULE AQ 4 X U/I ST; 16 BITS OF RESOLUTION, ACCURACY 0.3 %; 4 CHANNELS IN GROUPS OF 4; DIAGNOSIS, SUBSTITUTE VALUE INCL. INFEEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL

Product type designation	
<b>General information</b>	
HW functional status	E01
Firmware version	V2.0.0
<b>Product function</b>	
• I&M data	Yes; I&M0 to I&M3
<b>Engineering with</b>	
• STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12
• STEP 7 can be configured/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 / -
<b>Operating mode</b>	
• MSO	Yes
<b>CiR - Configuration in RUN</b>	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
<b>Supply voltage</b>	
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.	190 mA; with 24 V DC supply
<b>Power</b>	
Power available from the backplane bus	0.6 W
<b>Power losses</b>	
Power loss, typ.	4 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.	3.2 ms; independent of number of activated channels
<b>Output ranges, voltage</b>	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -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 $\Omega$ m 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 (based on output area, 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 area), (+/-)	0.05 %
<b>Operational limit in overall temperature range</b>	
• Voltage, relative to output area, (+/-)	0.3 %
• Current, relative to output area, (+/-)	0.3 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Voltage, relative to output area, (+/-)	0.2 %
• Current, relative to output area, (+/-)	0.2 %
<b>Interrupts/diagnostics/status information</b>	
Substitute values connectable	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Diagnostic messages</b>	
• Diagnostics	Yes
• 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
<b>Electrical isolation channels</b>	
• between the channels	No
• between the channels, in groups of	4
• between the channels and the backplane bus	Yes
• between the channels and the load voltage L+	Yes
<b>Permissible potential difference</b>	
between MANA and M internally (UISO)	75 V DC/60 V AC (base isolation)
between S- and MANA (UCM)	+/- 8 V
<b>Isolation</b>	
Isolation checked with	707 V DC (type test)
<b>Decentralized operation</b>	

Prioritized startup	No
<b>Dimensions</b>	
Width	35 mm
Height	147 mm
Depth	129 mm
<b>Weights</b>	
Weight, approx.	310 g
<b>last modified:</b>	12.03.2015