



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. INFEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL

General information	
Hardware product version	E01
Firmware version	V2.0.0
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• 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 / -
Operating mode	
• 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.	190 mA; with 24 V DC supply
Power	
Power available from the backplane bus	0.6 W
Power losses	
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
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 to 5 V	Yes
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 to +20 mA	Yes
• 4 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 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	
• Cable length, shielded, max.	800 m; for current, 200 m for voltage

Analog value creation

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 (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 % |

Operational limit in overall temperature range

- | | |
|---|-------|
| • Voltage, relative to output area, (+/-) | 0.3 % |
| • Current, relative to output area, (+/-) | 0.3 % |

Basic error limit (operational limit at 25 °C)

- | | |
|---|-------|
| • Voltage, relative to output area, (+/-) | 0.2 % |
| • Current, relative to output area, (+/-) | 0.2 % |

Interrupts/diagnostics/status information

- | | |
|-------------------------------|-----|
| Substitute values connectable | Yes |
|-------------------------------|-----|

Alarms

- | | |
|--------------------|-----|
| • Diagnostic alarm | Yes |
|--------------------|-----|

Diagnostic messages

- | | |
|---------------------------------|-------------------------------------|
| • 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 |

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
- for module diagnostics

Yes; Red LED

Yes; Red LED

Galvanic isolation

Electrical isolation channels

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

No

4

Yes

Yes

Permissible potential difference

between MANA and M internally (UISO)

75 V DC/60 V AC (base isolation)

between S- and MANA (UCM)

+/- 8 V

Isolation

Isolation checked with

707 V DC (type test)

Decentralized operation

Prioritized startup

No

Dimensions

Width

35 mm

Height

147 mm

Depth

129 mm

Weights

Weight, approx.

310 g

last modified:

30.09.2014