



SIMATIC S7-1500, ANALOG INPUT MODULE AI 8 X U/I HS, 16 BITS OF RESOLUTION, ACCURACY 0.3 %; 8 CHANNELS IN GROUPS OF 8; COMMON MODE VOLTAGE APPR. 10V; DIAGNOSIS, PROCESSALARMS; 8 CHANNELS IN 0.0625 MS INCL. INFEEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL

Figure similar

Product type designation	
General information	
HW functional status	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	
• MSI	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.	240 mA; with 24 V DC supply
Encoder supply	
24 V encoder supply	

- short-circuit protection Yes
- Output current, max. 53 mA

Power

Power available from the backplane bus 1.2 W

Power losses

Power loss, typ. 3.4 W

Analog inputs

Number of analog inputs 8

- For current measurement 8
- For voltage measurement 8

permissible input voltage for voltage input (destruction limit), max. 28.8 V

permissible input current for current input (destruction limit), max. 40 mA

Input ranges (rated values), voltages

- 1 V to 5 V Yes
- Input resistance (1 V to 5 V) 50 k Ω
- -10 V to +10 V Yes
- Input resistance (-10 V to +10 V) 100 k Ω
- -5 V to +5 V Yes
- Input resistance (-5 V to +5 V) 50 k Ω

Input ranges (rated values), currents

- 0 to 20 mA Yes
- Input resistance (0 to 20 mA) 41 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
- -20 mA to +20 mA Yes
- Input resistance (-20 mA to +20 mA) 41 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
- 4 mA to 20 mA Yes
- Input resistance (4 mA to 20 mA) 41 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC

Cable length

- shielded, max. 800 m

Analog value generation for the inputs

Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max. 16 bit
- Basic execution time of the module (all channels released) 62.5 μ s; independent of number of activated channels

Smoothing of measured values

- Parameterizable Yes
- Step: None Yes
- Step: low Yes
- Step: Medium Yes

- Step: High

Yes

Encoder

Connection of signal encoders

- | | |
|--|-------|
| • for voltage measurement | Yes |
| • for current measurement as 2-wire transducer | Yes |
| — Burden of 2-wire transmitter, max. | 820 Ω |
| • for current measurement as 4-wire transducer | Yes |

Errors/accuracies

- | | |
|--|-----------|
| Linearity error (relative to input range), (+/-) | 0.02 % |
| Temperature error (relative to input range), (+/-) | 0.005 %/K |
| Crosstalk between the inputs, min. | -60 dB |
| Repeat accuracy in steady state at 25 °C (relative to input area), (+/-) | 0.02 % |

Operational limit in overall temperature range

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

Basic error limit (operational limit at 25 °C)

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

Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency

- | | |
|----------------------------------|-------------------------|
| • common mode voltage, max. | 10 V |
| • Common mode interference, min. | 60 dB; at 400 Hz: 50 dB |

Isochronous mode

- | | |
|---|--------|
| Isochronous operation (application synchronized up to terminal) | Yes |
| Filtering and processing time (TCI), min. | 80 μs |
| Bus cycle time (TDP), min. | 250 μs |

Interrupts/diagnostics/status information

Alarms

- | | |
|---------------------|--|
| • Diagnostic alarm | Yes |
| • Limit value alarm | Yes; two upper and two lower limit values in each case |

Diagnostic messages

- | | |
|---------------------------------|---|
| • Diagnostics | Yes |
| • Monitoring the supply voltage | Yes |
| • Wire break | Yes; only for 1 ... 5 V and 4 ... 20 mA |
| • Overflow/underflow | Yes |

Diagnostics indication 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 |

Electrical isolation channels	
• between the channels	No
• between the channels and the backplane bus	Yes
• between the channels and the supply voltage of the electronics	Yes

Permissible potential difference	
between the inputs (UCM)	20 V DC
between inputs and MANA (UCM)	10 V DC
between M internally and the inputs	75V DC/60V AC

Isolation	
Isolation checked with	707 V DC

Ambient conditions	
Ambient temperature in operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C

Decentralized operation	
Prioritized startup	No

Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm

Weights	
Weight, approx.	200 g

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