

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS SIMATIC S7

6ES7531-7MH00-0AB0

16-CHANNEL CURRENT INPUT MODULE

Used with the applicable SIMATIC S7-1500 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official product documentation



SIMATIC S7-1500, analog input module AI 16xI BA, 16-bit resolution accuracy 0.5%, 16 channels in groups of 16, common mode voltage 4 V DC, diagnostics, hardware interrupts; delivery including infeed element, shield bracket and shield terminal: front connector (screw terminals or push-in) to be ordered separately

General information	
Product type designation	AI 16xI BA
HW functional status	From FS01
Firmware version	V1.0.0
FW update possible	Yes
Product function	
I&M data	Yes; I&M0 to I&M3
Isochronous mode	No
Prioritized startup	No
Measuring range scalable	No
Scalable measured values	No
Adjustment of measuring range	No
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V16 with HSP 312 / V17
STEP 7 configurable/integrated from version	V5.5 SP3 / -
PROFIBUS from GSD version/GSD revision	V1.0 / V5.1
PROFINET from GSD version/GSD revision	V2.3 / -
Operating mode	
Oversampling	No
MSI	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	No
Power	
Power available from the backplane bus	0.85 W
Power loss	
Power loss, typ.	1.2 W
Analog inputs	
Number of analog inputs	16
For current measurement	16
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), currents	
0 to 10 mA	No
0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
-20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC

• 4 mA to 20 mA — Input resistance (4 mA to 20 mA)	Yes 25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
Cable length	
• shielded, max.	800 m
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) • Interference voltage suppression for interference frequency f1 in Hz	16 bit Yes 2,5 / 16,67 / 20 / 100 ms 10 / 24 / 27 / 107 ms 400 / 60 / 50 / 10 Hz
Smoothing of measured values	
• parameterizable • Step: None • Step: low • Step: Medium • Step: High	Yes Yes Yes Yes Yes
Encoder	
Connection of signal encoders	
• for voltage measurement • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection • for resistance measurement with three-wire connection • for resistance measurement with four-wire connection	No Yes; with external supply Yes No No No
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.1 %
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, max.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.1 %
Operational error limit in overall temperature range	
• Current, relative to input range, (+/-)	0.5 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.3 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min. • Common mode voltage, max. • Common mode interference, min.	40 dB 4 V 60 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm • Limit value alarm	Yes Yes; two upper and two lower limit values in each case
Diagnoses	
• Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow	No Yes; Only for 4 ... 20 mA No No Yes
Diagnostics indication LED	
• RUN LED • ERROR LED • MAINT LED	Yes; green LED Yes; red LED No

• Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	No Yes; green LED Yes; red LED Yes; red LED
Potential separation	
Potential separation channels	
• between the channels • between the channels, in groups of • between the channels and backplane bus	No 16 Yes
Permissible potential difference	
between the inputs (UCM)	8 V DC
Between the inputs and MANA (UCM)	4 V DC
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-30 °C 60 °C -30 °C 40 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	250 g
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