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Data sheet 6ES7531-7LH00-0AB0



SIMATIC S7-1500, analog input module AI 16xU 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 16xU 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
Input current	
Current consumption, max.	0 mA
Power	
Power consumption from the backplane bus	0.85 W
Power loss	
Power loss, typ.	0.75 W
Address area	
Address space per module	
● Inputs	32 byte
● Outputs	0 byte
Analog inputs	
Number of analog inputs	16
● For voltage measurement	16

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permissible input voltage for voltage input (destruction limit), max.	12 V; 12 V continuous, 30 V for max. 1 s
Analog input with oversampling	No
Standardization of measured values	No
Input ranges (rated values), voltages	
● 0 to +5 V	No
● 0 to +10 V	No
● 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	10 MΩ
● -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	10 MΩ
● -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	10 MΩ
● -2.5 V to +2.5 V	No
● -25 mV to +25 mV	No
● -250 mV to +250 mV	No
● -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	10 MΩ
● -50 mV to +50 mV	No
● -500 mV to +500 mV	No
● -80 mV to +80 mV	No
Cable length	
● shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	16 bit
● Integration time, parameterizable	Yes
● Integration time (ms)	2,5 / 16,67 / 20 / 100 ms
● Basic conversion time, including integration time (ms)	10 / 24 / 27 / 107 ms
— additional conversion time for wire-break monitoring	4 ms (to be considered for 1 to 5 V measurement)
● Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz
Smoothing of measured values	
● Number of smoothing levels	4
● 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	No
● for current measurement as 4-wire transducer	No
● for resistance measurement with two-wire connection	No
● for resistance measurement with three-wire connection	No
● for resistance measurement with four-wire connection	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	
● Voltage, relative to input range, (+/-)	0.5 %
Basic error limit (operational limit at 25 °C)	
● Voltage, relative to input range, (+/-)	0.3 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
● Series mode interference (peak value of interference <	40 dB

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rated value of input range), min.	
● Common mode voltage, max.	4 V
● Common mode interference, min.	60 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
● Diagnostic alarm	Yes
● Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnoses	
● Monitoring the supply voltage	No
● Wire break	Yes; Only for 1 ... 5 V
● short-circuit	No
● Group error	No
● Overflow/Underflow	Yes
Diagnostics indication LED	
● RUN LED	Yes; green LED
● ERROR LED	Yes; red LED
● MAINT LED	No
● Monitoring of the supply voltage (PWR-LED)	No
● Channel status display	Yes; green LED
● for channel diagnostics	Yes; red LED
● for module diagnostics	Yes; red LED
Potential separation	
Potential separation channels	
● between the channels	No
● between the channels, in groups of	16
● between the channels and backplane bus	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)
Standards, approvals, certificates	
Siemens Eco Profile (SEP)	Siemens EcoTech
Suitable for applications according to AMS 2750	No
Suitable for applications according to CQI-9	No
Ecological footprint	
● environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	38.6 kg
— global warming potential, (during production) [CO2 eq]	14.4 kg
— global warming potential, (during operation) [CO2 eq]	24.6 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.44 kg
Security	
signed firmware update	No
safely removing data	No
data integrity	No
Ambient conditions	
Ambient temperature during operation	
● horizontal installation, min.	-30 °C
● horizontal installation, max.	60 °C
● vertical installation, min.	-30 °C
● vertical installation, max.	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
Absolute humidity	

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● dew point, min.	-60 °C; suitable for dry room applications

Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm

Weights	
Weight, approx.	250 g

Classifications

	Version	Classification
eClass	16	27-24-22-01
eClass	14	27-24-22-01
eClass	12	27-24-22-01
eClass	9.1	27-24-22-01
eClass	9	27-24-22-01
eClass	8	27-24-22-01
eClass	7.1	27-24-22-01
eClass	6	27-24-22-01
ETIM	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

CE EG-Konf. | UKCA | Miscellaneous | Manufacturer Declaration | UL | KC

General Product Approval | **For use in hazardous locations**

RCM | EAC | China RoHS | Manufacturer Declaration | UL | FM

For use in hazardous locations

CCC-Ex | Miscellaneous | ATEX | Type Examination Certificate | IECEx | CCC-Ex

Maritime application

ABS | BUREAU VERITAS | DNV | LRS | NK / Nippon Kaiji Kyokai | RINA

Maritime application | **Environment**

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CCS (China Classification Society) KR (Korean Register of Shipping)

last modified: 5/8/2026

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