SIEMENS

Data sheet 6ES7531-7LK00-0AB0

SIMATIC S7-1500, analog input module for cell voltage measurement, AI 24xCVM HF, up to 24 bit resolution, accuracy: 0.1%, 24 channels in groups of 12, insulation voltage: 600 V DC, diagnostics, hardware interrupts, calibrate in RUN mode; delivery including infeed element, shielding bracket and shield terminal: front connector (push-in) included note: Module is not suitable for regular voltage measurement of +/- 5 V!

General information	
Product type designation	AI 24xCVM HF
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
Operating mode	
● Oversampling	No
● MSI	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Power	
Power consumption from the backplane bus	2.8 W
Power loss	
Power loss, typ.	2.1 W
Analog inputs	
Number of analog inputs	24
● For voltage measurement	24; at ±3.5 V; 16 channels at ± 5 V
permissible input voltage for voltage input (destruction limit), max.	160 V
Input ranges (rated values), voltages	
● -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	1 MΩ; connected to +27 V for open-circuit detection
Cable length	
● shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	16 bit; 24 bits in floating-point format
● Integration time, parameterizable	Yes
● Integration time (ms)	2,5 / 16,67 / 20 / 100 ms
● Basic conversion time, including integration time (ms)	10 / 24 / 28 / 109 ms
— additional conversion time for wire-break monitoring	35 ms; once per module cycle
● Basic execution time of the module (all channels released)	Channel 0 and 12, 1 and 13, etc. measure in pairs simultaneously. The slower channel of each pair determines the basic execution time of the channel pair. The basic execution time of the module is calculated by adding the basic conversion times of the channel pairs.
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
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, max.	-80 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.02 %
note regarding accuracy	at temperatures below 0 °C, the figures for operating error and temperature error are doubled
Operational error limit in overall temperature range	
● Voltage, relative to input range, (+/-)	0.1 %
Basic error limit (operational limit at 25 °C)	
● Voltage, relative to input range, (+/-)	0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
● Series mode interference (peak value of interference < rated value of input range), min.	36 dB
● Common mode interference, min.	70 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	Yes
● Wire-break	Yes
● Overflow/underflow	Yes
Diagnostics indication LED	
● RUN LED	Yes; green LED
● ERROR LED	Yes; red LED
● 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	12
● between the channels and backplane bus	Yes
Permissible potential difference	
Between the inputs and MANA (UCM)	21 V DC
between M internally and the inputs	600 V DC; insulation rated for 1000 V DC basic insulation: between the channels and the backplane bus
Isolation	
Isolation tested with	4700 V DC between channels and backplane bus
Standards, approvals, certificates	
Suitable for applications according to AMS 2750	No
Suitable for applications according to CQI-9	No
product functions / security / header	
signed firmware update	Yes
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.	4 000 m; Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260
Dimensions	
Width	25 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	240 g

Classifications

	Version	Classification
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	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420

Approvals / Certificates

General Product Approval

KC | Miscellaneous

EMV

KC

For use in hazardous locations

CCC-Ex | FM | Type Examination Certificate

For use in hazardous locations

Miscellaneous

Marine / Shipping

NK / Nippon Kaiji Kyokai

last modified: 5/14/2025