



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
<ul style="list-style-type: none"> FW update possible 	Yes
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Isochronous mode 	No
<ul style="list-style-type: none"> Measuring range scalable 	No
<ul style="list-style-type: none"> Scalable measured values 	No
<ul style="list-style-type: none"> Adjustment of measuring range 	No
Engineering with	
<ul style="list-style-type: none"> STEP 7 configurable/integrated from version 	V5.5 SP3 / -
<ul style="list-style-type: none"> PROFIBUS from GSD version/GSD revision 	not supported
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No
<ul style="list-style-type: none"> MSI 	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Input current	
Current consumption, max.	0 mA
Power	
Power consumption from the backplane bus	2.8 W
Power loss	
Power loss, typ.	2.1 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Inputs 	48 byte
<ul style="list-style-type: none"> Outputs 	0 byte
Analog inputs	
Number of analog inputs	24
<ul style="list-style-type: none"> For voltage measurement 	24; at ±3.5 V; 16 channels at ± 5 V
permissible input voltage for voltage input (destruction limit), max.	160 V
Analog input with oversampling	No
Standardization of measured values	No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> -5 V to +5 V 	Yes

— Input resistance (-5 V to +5 V)	1 M Ω ; connected to +27 V for open-circuit detection
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; 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
• 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), (+/-)	0.02 %
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 $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ 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
• 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	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		
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	Yes	
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.	4 000 m; Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	
Absolute humidity		
• dew point, min.	-60 °C; suitable for dry room applications	
Dimensions		
Width	25 mm	
Height	147 mm	
Depth	129 mm	
Weights		
Weight, approx.	240 g	
Other		
Note:	Supplied incl. 40-pole push-in front connectors	
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	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420

Approvals / Certificates

General Product Approval



[Miscellaneous](#)



General Product Approval

EMV

For use in hazardous locations

[China RoHS](#)

[Manufacturer Declaration](#)



[CCC-Ex](#)

[FM](#)

For use in hazardous locations

Maritime application



[Type Examination Certificate](#)

[Miscellaneous](#)



[CCC-Ex](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)

Maritime application

Environment

[KR \(Korean Register of Shipping\)](#)



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