

Siemens  
EcoTech



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
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	No
<ul style="list-style-type: none"> <li>Prioritized startup</li> </ul>	No
<ul style="list-style-type: none"> <li>Measuring range scalable</li> </ul>	No
<ul style="list-style-type: none"> <li>Scalable measured values</li> </ul>	No
<ul style="list-style-type: none"> <li>Adjustment of measuring range</li> </ul>	No
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V16 with HSP 312 / V17
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
<ul style="list-style-type: none"> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	V1.0 / V5.1
<ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>	V2.3 / -
Operating mode	
<ul style="list-style-type: none"> <li>Oversampling</li> </ul>	No
<ul style="list-style-type: none"> <li>MSI</li> </ul>	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	
<ul style="list-style-type: none"> <li>Inputs</li> </ul>	32 byte
<ul style="list-style-type: none"> <li>Outputs</li> </ul>	0 byte
Analog inputs	
Number of analog inputs	16
<ul style="list-style-type: none"> <li>For voltage measurement</li> </ul>	16

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
<b>Input ranges (rated values), voltages</b>	
• 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
<b>Cable length</b>	
• shielded, max.	200 m
<b>Analog value generation for the inputs</b>	
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
• 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 $f_1$ in Hz	400 / 60 / 50 / 10 Hz
<b>Smoothing of measured values</b>	
• Number of smoothing levels	4
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
• 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
<b>Errors/accuracies</b>	
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 %
<b>Operational error limit in overall temperature range</b>	
• Voltage, relative to input range, (+/-)	0.5 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Voltage, relative to input range, (+/-)	0.3 %
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b>	
• Series mode interference (peak value of interference <	40 dB

rated value of input range), min.	
• Common mode voltage, max.	4 V
• Common mode interference, min.	60 dB
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case
<b>Diagnoses</b>	
• Monitoring the supply voltage	No
• Wire break	Yes; Only for 1 ... 5 V
• Short-circuit	No
• Group error	No
• Overflow/Underflow	Yes
<b>Diagnostics indication LED</b>	
• 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
<b>Potential separation</b>	
<b>Potential separation channels</b>	
• between the channels	No
• between the channels, in groups of	16
• between the channels and backplane bus	Yes
<b>Permissible potential difference</b>	
between the inputs (UCM)	8 V DC
Between the inputs and MANA (UCM)	4 V DC
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Standards, approvals, certificates</b>	
Siemens Eco Profile (SEP)	Siemens EcoTech
Suitable for applications according to AMS 2750	No
Suitable for applications according to CQI-9	No
<b>Ecological footprint</b>	
• environmental product declaration	Yes
<b>Global warming potential</b>	
— 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
<b>Security</b>	
signed firmware update	No
safely removing data	No
data integrity	No
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	40 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
<b>Absolute humidity</b>	

• 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
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**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
IDEA	4	3562
UNSPSC	15	32-15-17-05

**Approvals / Certificates**

General Product Approval



[Miscellaneous](#)

[Manufacturer Declaration](#)



General Product Approval

For use in hazardous locations



[China RoHS](#)

[Manufacturer Declaration](#)



[EM](#)

For use in hazardous locations

Maritime application

[CCC-Ex](#)

[Miscellaneous](#)



[Type Examination Certificate](#)



IECEX



ABS

Maritime application



LRS

[NK / Nippon Kaiji Kyokai](#)



RINA

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

Maritime application

Environment

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



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