



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 | |
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| Product type designation | AI 16xU BA |
| 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"> Prioritized startup | 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 TIA Portal configurable/integrated from version | V16 with HSP 312 / V17 |
| <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 | V1.0 / V5.1 |
| <ul style="list-style-type: none"> PROFINET from GSD version/GSD revision | V2.3 / - |
| 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 | No |
| Power | |
| Power available from the backplane bus | 0.85 W |
| Power loss | |
| Power loss, typ. | 0.75 W |
| Analog inputs | |
| Number of analog inputs | 16 |
| <ul style="list-style-type: none"> For voltage measurement | 16 |
| permissible input voltage for voltage input (destruction limit), max. | 12 V; 12 V continuous, 30 V for max. 1 s |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> 0 to +5 V | No |
| <ul style="list-style-type: none"> 0 to +10 V | No |
| <ul style="list-style-type: none"> 1 V to 5 V | Yes |
| <ul style="list-style-type: none"> — Input resistance (1 V to 5 V) | 10 MΩ |
| <ul style="list-style-type: none"> -1 V to +1 V | Yes |

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| — 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 | |
| • 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), (+/-) | 0.1 % |
| 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 $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency | |
| • Series mode interference (peak value of interference < rated value of input range), min. | 40 dB |
| • 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 | |

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| • 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

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| • between the channels | No |
| • between the channels, in groups of | 16 |
| • between the channels and backplane bus | Yes |

Permissible potential difference

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|-----------------------------------|--------|
| between the inputs (UCM) | 8 V DC |
| Between the inputs and MANA (UCM) | 4 V DC |

Isolation

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| Isolation tested with | 707 V DC (type test) |
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Ambient conditions

Ambient temperature during operation

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| • 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

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| • Installation altitude above sea level, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
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Dimensions

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| Width | 35 mm |
| Height | 147 mm |
| Depth | 129 mm |

Weights

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| Weight, approx. | 250 g |
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last modified: 1/19/2021 