SIEMENS

## Data sheet 6ES7144-5KD00-0BA0



SIMATIC ET 200AL, AI 4XU/I/RTD, 4x M12, Degree of protection IP67

| | |
|---|---|
| **General information** | |
| Product type designation | AI 4xU/I/RTD |
| HW functional status | FS07 |
| Firmware version | V2.0.x |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| Engineering with | |
| ● STEP 7 TIA Portal configurable/integrated from version | STEP 7 V13 SP1 or higher |
| ● STEP 7 configurable/integrated from version | From V5.5 SP4 Hotfix 3 |
| ● PROFIBUS from GSD version/GSD revision | GSD as of Revision 5 |
| ● PROFINET from GSD version/GSD revision | GSDML V2.3.1 |
| **Supply voltage** | |
| power supply according to NEC Class 2 required | No |
| Load voltage 1L+ | |
| ● Rated value (DC) | 24 V |
| ● permissible range, lower limit (DC) | 20.4 V |
| ● permissible range, upper limit (DC) | 28.8 V |
| ● Reverse polarity protection | Yes; against destruction |
| **Input current** | |
| Current consumption (rated value) | 35 mA; without load |
| from load voltage 1L+ (unswitched voltage) | 4 A; Maximum value |
| from load voltage 2L+, max. | 4 A; Maximum value |
| **Encoder supply** | |
| Number of outputs | 4 |
| 24 V encoder supply | |
| ● Short-circuit protection | Yes; per channel, electronic |
| ● Output current, max. | 0.5 A; Per channel, total current of all channels max. 1 A |
| **Power loss** | |
| Power loss, typ. | 1.5 W |
| **Analog inputs** | |
| Number of analog inputs | 4 |
| ● For current measurement | 4 |
| ● For voltage measurement | 4 |
| ● For resistance/resistance thermometer measurement | 4 |
| permissible input voltage for voltage input (destruction limit), max. | 30 V |
| permissible input current for current input (destruction limit), max. | 50 mA |
| Cycle time (all channels), min. | 8 ms |


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|---|---|
| Technical unit for temperature measurement adjustable | Yes; Degrees Celsius / degrees Fahrenheit / Kelvin |
| Input ranges (rated values), voltages | |
| ● 0 to +10 V | Yes |
| — Input resistance (0 to 10 V) | 10 MΩ |
| ● 1 V to 5 V | Yes |
| — Input resistance (1 V to 5 V) | 10 MΩ |
| Input ranges (rated values), currents | |
| ● 0 to 20 mA | Yes |
| — Input resistance (0 to 20 mA) | 50 Ω |
| ● 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 50 Ω |
| Input ranges (rated values), resistance thermometer | |
| ● Ni 100 | Yes; Standard/climate |
| — Input resistance (Ni 100) | 10 MΩ |
| ● Pt 100 | Yes; Standard/climate |
| — Input resistance (Pt 100) | 10 MΩ |
| Input ranges (rated values), resistors | |
| ● 0 to 150 ohms | Yes |
| — Input resistance (0 to 150 ohms) | 10 MΩ |
| ● 0 to 300 ohms | Yes |
| — Input resistance (0 to 300 ohms) | 10 MΩ |
| Cable length | |
| ● shielded, max. | 30 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; channel by channel |
| ● Integration time (ms) | 0,3 / 16,7 / 20 / 60 |
| ● Interference voltage suppression for interference frequency f1 in Hz | 3 600 / 60 / 50 / 16.7 |
| ● Conversion time (per channel) | 2 / 18 / 21 / 61 ms |
| Smoothing of measured values | |
| ● Parameterizable | Yes |
| ● Step: None | Yes; 1x cycle time |
| ● Step: low | Yes; 4x cycle time |
| ● Step: Medium | Yes; 16x cycle time |
| ● Step: High | Yes; 32x cycle time |
| **Encoder** | |
| Connection of signal encoders | |
| ● for voltage measurement | Yes |
| ● for current measurement as 2-wire transducer | Yes |
| ● for current measurement as 4-wire transducer | Yes |
| ● for resistance measurement with two-wire connection | Yes |
| ● for resistance measurement with three-wire connection | Yes |
| **Errors/accuracies** | |
| Linearity error (relative to input range), (+/-) | 0.025 % |
| Temperature error (relative to input range), (+/-) | 0.01 %/K |
| Crosstalk between the inputs, max. | -70 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.01 % |
| Operational error limit in overall temperature range | |
| ● Voltage, relative to input range, (+/-) | 0.35 % |
| ● Current, relative to input range, (+/-) | 0.45 % |
| ● Resistance, relative to input range, (+/-) | 0.25 % |
| ● Resistance thermometer, relative to input range, (+/-) | 0.25 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Voltage, relative to input range, (+/-) | 0.25 % |
| ● Current, relative to input range, (+/-) | 0.25 % |


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|---|---|
| ● Resistance, relative to input range, (+/-) | 0.15 % |
| ● Resistance thermometer, relative to input range, (+/-) | 0.15 % |
| Interference voltage suppression for f = n x (f1 +/- 0.5 %), f1 = interference frequency | |
| ● Series mode interference (peak value of interference < rated value of input range), min. | 40 dB |
| **Interrupts/diagnostics/status information** | |
| Alarms | |
| ● Diagnostic alarm | Yes; Parameterizable |
| ● Limit value alarm | Yes; Parameterizable |
| Diagnoses | |
| ● Wire break | Yes; at 4 mA to 20 mA and 1 V to 5 V |
| ● Short-circuit | Yes; Encoder supply to M, channel by channel |
| ● Overflow/Underflow | Yes |
| Diagnostics indication LED | |
| ● Channel status display | Yes; green LED |
| ● for module diagnostics | Yes; green/red LED |
| **Potential separation** | |
| between the load voltages | Yes |
| Potential separation channels | |
| ● between the channels | No |
| ● between the channels and backplane bus | Yes |
| ● between the channels and the power supply of the electronics | No |
| **Isolation** | |
| Isolation tested with | 707 V DC (type test) |
| **Degree and class of protection** | |
| IP degree of protection | IP65/67 |
| **Standards, approvals, certificates** | |
| Suitable for safety-related tripping of standard modules | Yes; From FS02 |
| Highest safety class achievable for safety-related tripping of standard modules | |
| ● Performance level according to ISO 13849-1 | PL d |
| ● Category according to ISO 13849-1 | Cat. 3 |
| ● SIL acc. to IEC 62061 | SIL 2 |
| ● remark on safety-oriented shutdown | https://www.siemes.plc.com/?s=6ES7144-5KD00-0BA0 |
| **Security** | |
| signed firmware update | Yes |
| data integrity | Yes |
| **Ambient conditions** | |
| Ambient temperature during operation | |
| ● min. | -30 °C |
| ● max. | 55 °C |
| Altitude during operation relating to sea level | |
| ● Ambient air temperature-barometric pressure-altitude | Up to max. 5 000 m, at installation height > 2 000 m additional restrictions |
| **Connection method** | |
| Design of electrical connection for the inputs and outputs | M12, 5-pole |
| Design of electrical connection for supply voltage | M8, 4-pole |
| ET-Connection | |
| ● ET-Connection | M8, 4-pin, shielded |
| **Dimensions** | |
| Width | 30 mm |
| Height | 159 mm |
| Depth | 40 mm |
| **Weights** | |
| Weight, approx. | 168 g |
| **Classifications** | |

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-26-01 |
| eClass | 14 | 27-24-26-01 |


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|---|---|---|
| eClass | 12 | 27-24-26-01 |
| eClass | 9.1 | 27-24-26-01 |
| eClass | 9 | 27-24-26-01 |
| eClass | 8 | 27-24-26-01 |
| eClass | 7.1 | 27-24-26-01 |
| eClass | 6 | 27-24-26-01 |
| ETIM | 10 | EC001596 |
| ETIM | 9 | EC001596 |
| ETIM | 8 | EC001596 |
| ETIM | 7 | EC001596 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

### General Product Approval












| General Product Approval | | Test Certificates | other | | Environment |
|---|---|---|---|---|---|
|  | Confirmation | Miscellaneous | Confirmation |  | Environmental Confirmations |



### Environment

Environmental Confirmations

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