

SIPLUS ET 200SP, (-40) -25...+60°C with conformal coating based on 6ES7134-6HB00-0DA1 . Analog input module, AI 2x U/I 2-, 4-wire high Speed, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.3%



General information	
Product type designation	AI 2xU/I 2-/4-wire HS
Firmware version	V2.0
FW update possible	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
I&M data	Yes; I&M0 to I&M3
Measuring range scalable	No
Engineering with	
PROFIBUS as of GSD version/GSD revision	GSD Revision 5
PROFINET as of GSD version/GSD revision	GSDML V2.3
Operating mode	
Oversampling	Yes; 2 channels per module
MSI	No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes

Calibration possible in RUN	No
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Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes

Input current	
Current consumption (rated value)	39 mA; without sensor supply

Encoder supply	
24 V encoder supply	
• 24 V	Yes
• Short-circuit protection	Yes
• Output current, max.	20 mA; max. 50 mA per channel for a duration < 10 s

Power loss	
Power loss, typ.	0.95 W; without sensor supply

Address area	
Address space per module	
• Address space per module, max.	4 byte; + 1 byte for QI information (32 bytes in the oversampling operating mode)

Analog inputs	
Number of analog inputs	2; Differential inputs
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.	125 µs
Analog input with oversampling	Yes
• Values per cycle, max.	16
• Resolution, min.	50 µs

Input ranges (rated values), voltages	
• 0 to +10 V	Yes; 15 bit
• Input resistance (0 to 10 V)	75 kΩ
• 1 V to 5 V	Yes; 13 bit
• Input resistance (1 V to 5 V)	75 kΩ
• -10 V to +10 V	Yes; 16 bit incl. sign
• Input resistance (-10 V to +10 V)	75 kΩ
• -5 V to +5 V	Yes; 15 bit incl. sign
• Input resistance (-5 V to +5 V)	75 kΩ

Input ranges (rated values), currents	
• 0 to 20 mA	Yes; 15 bit

• Input resistance (0 to 20 mA)	130 Ω
• -20 mA to +20 mA	Yes; 16 bit incl. sign
• Input resistance (-20 mA to +20 mA)	130 Ω
• 4 mA to 20 mA	Yes; 14 bit
• Input resistance (4 mA to 20 mA)	130 Ω
Cable length	
• shielded, max.	1 000 m; 200 m for voltage measurement
Analog value generation for the inputs	
Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Interference voltage suppression for interference frequency f1 in Hz	No
• Conversion time (per channel)	10 μs
Smoothing of measured values	
• Number of smoothing levels	7; none; 2-/4-/8-/16-/32-/64-fold
• parameterizable	Yes
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes
— Burden of 2-wire transmitter, max.	650 Ω
• for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.03 %
Temperature error (relative to input range), (+/-)	0.01 %/K
Crosstalk between the inputs, min.	-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 %
• Current, relative to input range, (+/-)	0.5 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.2 %
• Current, relative to input range, (+/-)	0.2 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
• Common mode voltage, max.	35 V
• Common mode interference, min.	90 dB
Isochronous mode	

Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	80 µs
Bus cycle time (TDP), min.	125 µs

Interrupts/diagnostics/status information

Alarms

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| • Diagnostic alarm | Yes |
| • Limit value alarm | Yes; two upper and two lower limit values in each case |

Diagnostic messages

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| • Wire-break | Yes; channel-by-channel, at 4 to 20 mA only |
| • Short-circuit | Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short-circuit in encoder supply |
| • Group error | Yes |
| • Overflow/underflow | Yes |

Diagnostics indication LED

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| • Monitoring of the supply voltage (PWR-LED) | Yes; Green PWR LED |
| • Channel status display | Yes; Green LED |
| • for channel diagnostics | Yes; Red LED |
| • for module diagnostics | Yes; green/red DIAG LED |

Potential separation

Potential separation channels

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| • between the channels | Yes |
| • between the channels and backplane bus | Yes |
| • between the channels and the power supply of the electronics | Yes |

Permissible potential difference

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| between different circuits | 75 V DC/60 V AC (base isolation) |
| between the inputs (UCM) | 75 V DC/60 V AC |

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. | -40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C |
| • horizontal installation, max. | 60 °C; = Tmax |

Altitude during operation relating to sea level

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|--|---|
| • Installation altitude above sea level, max. | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |

Relative humidity

• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
— Against mechanical environmental conditions acc. to EN 60721-3-3	Yes
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
— Against mechanical environmental conditions acc. to EN 60721-3-6	Yes
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
Dimensions	

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	32 g
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last modified: 08/16/2019