

SIPLUS ET 200SP AI 4xU/I 2-w ST -40 °C to +60 °C with conformal coating BasedOn: 6ES7134-6HD01-0BA1 . Packing unit: 1 unit, suitable for BU type A0, A1, color coding CC03, module diagnostics, 16 bit, +/-0.3%

General information

Product type designation	ET 200SP, AI 4x U/I 2-wire, P. unit 1
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC03
Product function	
<ul style="list-style-type: none"> • I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> • Measuring range scalable 	No
Operating mode	
<ul style="list-style-type: none"> • Oversampling 	No
<ul style="list-style-type: none"> • MSI 	No

CI R – Configuration in RUN

Reparameterization possible in RUN	Yes
Calibration possible in RUN	No

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, max.	37 mA; without sensor supply
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Encoder supply

24 V encoder supply	
<ul style="list-style-type: none"> • 24 V 	Yes
<ul style="list-style-type: none"> • Short-circuit protection 	Yes
<ul style="list-style-type: none"> • Output current, max. 	20 mA; max. 50 mA per channel for a duration < 10 s

Power loss

Power loss, typ.	0.85 W; Without encoder supply voltage
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Address area

Address space per module	
<ul style="list-style-type: none"> • Address space per module, max. 	8 byte; + 1 byte for QI information

Hardware configuration

Automatic encoding

- Mechanical coding element Yes

Selection of BaseUnit for connection variants

- 2-wire connection BU type A0, A1

Analog inputs

Number of analog inputs	4; 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.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)

Input ranges (rated values), voltages

- 0 to +10 V Yes; 15 bit
- Input resistance (0 to 10 V) 120 k Ω
- 1 V to 5 V Yes; 15 bit
- Input resistance (1 V to 5 V) 120 k Ω
- -10 V to +10 V Yes; 16 bit incl. sign
- Input resistance (-10 V to +10 V) 120 k Ω
- -5 V to +5 V Yes; 16 bit incl. sign
- Input resistance (-5 V to +5 V) 120 k Ω

Input ranges (rated values), currents

- 0 to 20 mA Yes; 15 bit
- Input resistance (0 to 20 mA) 100 Ω ; + approx. 0.7 V diode forward voltage
- 4 mA to 20 mA Yes; 15 bit
- Input resistance (4 mA to 20 mA) 100 Ω ; + approx. 0.7 V diode forward voltage

Cable length

- shielded, max. 1 000 m; 200 m for voltage measurement

Analog value generation for the inputs

Measurement principle	integrating (Sigma-Delta)
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Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max. 16 bit
- Integration time, parameterizable Yes
- Interference voltage suppression for interference frequency f1 in Hz 16.6 / 50 / 60 Hz
- Conversion time (per channel) 180 / 60 / 50 ms

Smoothing of measured values

- Number of smoothing levels 4; None; 4/8/16 times
- 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	No
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.7 %
• Current, relative to input range, (+/-)	0.7 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.3 %
• Current, relative to input range, (+/-)	0.3 %
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.	70 dB
• Common mode voltage, max.	10 V
• Common mode interference, min.	90 dB
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	No
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; at 4 to 20 mA
• Short-circuit	Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply
• Group error	Yes
• Overflow/underflow	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• Channel status display	Yes; Green LED

- for channel diagnostics
- for module diagnostics

No
Yes; Green/red LED

Potential separation

Potential separation channels

- between the channels
Yes; channel group-specific between 2-wire current input group and voltage input group
- between the channels and backplane bus
Yes
- between the channels and the power supply of the electronics
Yes; only for voltage inputs

Permissible potential difference

between the inputs (UCM) 10 V DC

Isolation

Isolation tested with 707 V DC (type test)

Standards, approvals, certificates

Suitable for applications according to AMS 2750 Yes; Declaration of Conformity, see online support entry 109757262

Suitable for applications according to CQI-9 Yes

Ambient conditions

Ambient temperature during operation

- horizontal installation, min. -40 °C; = Tmin; Startup @ -25 °C
- horizontal installation, max. 60 °C; = Tmax
- vertical installation, min. -40 °C; = Tmin; Startup @ -25 °C
- vertical installation, max. 50 °C; = Tmax

Altitude during operation relating to sea level

- 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, *
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; *
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721	* 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
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	31 g
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