

SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 4XU/I 2-WIRE STANDARD, PACKING UNIT: 10 PIECES, FITS TO BU-TYPE A0, A1, COLOR CODE CC03, MODULE DIAGNOSIS, 16BIT, +/-0,3%



General information	
Product type designation	ET 200SP, AI 4xU/I 2-wire, PU 10
Firmware version	V1.1
<ul style="list-style-type: none"> FW update possible 	Yes
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"> Scalable measuring range 	No
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated as of version 	V11 SP2 / V13
<ul style="list-style-type: none"> STEP 7 configurable/integrated as of version 	V5.5 SP3 / -
<ul style="list-style-type: none"> PCS 7 configurable/integrated as of version 	V8.1 SP1
<ul style="list-style-type: none"> PROFIBUS as of GSD version/GSD revision 	GSD Revision 5
<ul style="list-style-type: none"> PROFINET as of GSD version/GSD revision 	GSDML V2.3
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No

- MSI

No

CiR - 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

- | | |
|----------------------------|---|
| • 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.	0.85 W; Without encoder supply voltage
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Address area

Address space per module

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|----------------------------------|-------------------------------------|
| • Address space per module, max. | 8 byte; + 1 byte for QI information |
|----------------------------------|-------------------------------------|

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 |
|--------------|-------------|

<ul style="list-style-type: none"> • Input resistance (0 to 20 mA) • 4 mA to 20 mA • Input resistance (4 mA to 20 mA) 	100 Ω; + approx. 0.7 V diode forward voltage Yes; 15 bit 100 Ω; + approx. 0.7 V diode forward voltage
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m; 200 m for voltage measurement

Analog value generation for the inputs

Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Interference voltage suppression for interference frequency f1 in Hz • Conversion time (per channel) 	16 bit Yes 16.6 / 50 / 60 Hz 180 / 60 / 50 ms
Smoothing of measured values	
<ul style="list-style-type: none"> • Number of levels • parameterizable 	4; None; 4/8/16 times Yes

Encoder

Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement • for current measurement as 2-wire transducer — Burden of 2-wire transmitter, max. • for current measurement as 4-wire transducer 	Yes Yes 650 Ω No

Errors/accuracies

Linearity error (relative to full-scale), (+/-)	0.01 %
Temperature error (relative to full-scale), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	50 dB
Repeat accuracy in steady state at 25 °C (relative to full-scale), (+/-)	0.05 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Voltage, relative to full-scale, (+/-) • Current, relative to full-scale, (+/-) 	0.5 % 0.5 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to full-scale, (+/-) • Current, relative to full-scale, (+/-) 	0.3 % 0.3 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
<ul style="list-style-type: none"> • Series mode interference (peak value of interference < rated value of input range), min. • Common mode voltage, max. • Common mode interference, min. 	70 dB 10 V 90 dB

Isochronous mode

Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
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	No
• for module diagnostics	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 different circuits	75 V DC/60 V AC (base isolation)
between the inputs (UCM)	10 V DC
Isolation	
Isolation tested with	707 V DC (type test)
Dimensions	
Width	15 mm
Weights	
Weight, approx.	31 g
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