

SIMATIC ET 200SP, Analog input module, AI 4xU/I 2-wire Standard, suitable for BU type A0, A1, Color code CC03, Module diagnostics, 16 bit, +/-0.3%



General information	
Product type designation	AI 4xU/I 2-wire ST
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"> Measuring range scalable 	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	
<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

Analog inputs

Number of analog inputs	4; Differential inputs
<ul style="list-style-type: none"> • For current measurement 	4
<ul style="list-style-type: none"> • For voltage 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.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)

Input ranges (rated values), voltages

<ul style="list-style-type: none"> • 0 to +10 V 	Yes; 15 bit
<ul style="list-style-type: none"> • Input resistance (0 to 10 V) 	120 kΩ
<ul style="list-style-type: none"> • 1 V to 5 V 	Yes; 15 bit
<ul style="list-style-type: none"> • Input resistance (1 V to 5 V) 	120 kΩ
<ul style="list-style-type: none"> • -10 V to +10 V 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> • Input resistance (-10 V to +10 V) 	120 kΩ
<ul style="list-style-type: none"> • -5 V to +5 V 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> • Input resistance (-5 V to +5 V) 	120 kΩ

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 — Burden of 2-wire transmitter, max.	Yes 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, (+/-)	0.5 %
• Current, relative to input range, (+/-)	0.5 %

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

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 the inputs (UCM) 10 V DC

Isolation

Isolation tested with 707 V DC (type test)

Dimensions

Width 15 mm
 Height 73 mm
 Depth 58 mm

Weights

Weight, approx. 31 g

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