

SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 4X1 2-/4-WIRE STANDARD, PACKING UNIT: 1 PIECE, FITS TO BU-TYPE A0, A1, COLOR CODE CC03, MODULE DIAGNOSIS, 16BIT, +/-0,3%



General information	
Product type designation	AI 4x1 2-/4-wire ST
HW functional status	From FS02
Firmware version	
• FW update possible	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC03
Product function	
• I&M data	Yes; I&M0 to I&M3
• Measuring range scalable	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V14 / -
• STEP 7 configurable/integrated as of version	V5.6 and higher
• PCS 7 configurable/integrated as of version	V8.1 SP1
• PROFIBUS as of GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher
• PROFINET as of GSD version/GSD revision	GSDML V2.3
Operating mode	

- Oversampling
- MSI

No

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

Encoder supply

24 V encoder supply

- 24 V
- Short-circuit protection
- Output current, max.

Yes

Yes

20 mA; max. 50 mA per channel for a duration < 10 s

Power loss

Power loss, typ.

0.85 W; Without encoder supply voltage

Address area

Address space per module

- 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
- 4-wire connection

BU type A0, A1

BU type A0, A1

Analog inputs

Number of analog inputs

4; Differential inputs

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), currents

- 0 to 20 mA
 - Input resistance (0 to 20 mA)
- -20 mA to +20 mA
 - Input resistance (-20 mA to +20 mA)

Yes; 16 bit incl. sign

100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation

Yes

100 Ω

<ul style="list-style-type: none"> • 4 mA to 20 mA — Input resistance (4 mA to 20 mA) 	Yes; 15 bit 100 Ω ; + approx. 0.7 V diode forward voltage in 2-wire operation
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m
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. 	16 bit
<ul style="list-style-type: none"> • Integration time, parameterizable 	Yes
<ul style="list-style-type: none"> • Interference voltage suppression for interference frequency f1 in Hz 	16.6 / 50 / 60 Hz
<ul style="list-style-type: none"> • Conversion time (per channel) 	180 / 60 / 50 ms
Smoothing of measured values	
<ul style="list-style-type: none"> • Number of smoothing levels 	4; None; 4/8/16 times
<ul style="list-style-type: none"> • parameterizable 	Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement 	No
<ul style="list-style-type: none"> • for current measurement as 2-wire transducer 	Yes
<ul style="list-style-type: none"> — Burden of 2-wire transmitter, max. 	650 Ω
<ul style="list-style-type: none"> • for current measurement as 4-wire transducer 	Yes
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; Applies to up to ± 5 V overvoltage in other channels
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Current, relative to input range, (+/-) 	0.5 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Current, relative to input range, (+/-) 	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. 	70 dB
<ul style="list-style-type: none"> • Common mode voltage, max. 	10 V
<ul style="list-style-type: none"> • Common mode interference, min. 	90 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
<ul style="list-style-type: none"> • 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; 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 4-wire voltage input group
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes; only for 4-wire transducer
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	31 g
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