

SIMATIC ET 200SP, Analog input module, AI 2x1 2-/4-wire Standard, Pack quantity: 1 unit, suitable for BU type A0, A1, Color code CC05, Module diagnostics, 16 bit



General information	
Product type designation	AI 2x1 2-/4-wire ST
HW functional status	from FS04
Firmware version	
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC05
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	No
<ul style="list-style-type: none"> <li>Measuring range scalable</li> </ul>	No
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul>	V13 SP1
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated as of version</li> </ul>	V5.5 SP3
<ul style="list-style-type: none"> <li>PROFIBUS as of GSD version/GSD revision</li> </ul>	GSD Revision 5
<ul style="list-style-type: none"> <li>PROFINET as of GSD version/GSD revision</li> </ul>	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.

45 mA; without sensor supply

### Encoder supply

24 V encoder supply

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

Yes

Yes

50 mA; Total current for both channels (two-wire)

Additional 24 V encoder supply

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

Yes

Yes; Module-wise

200 mA; Total current for both channels (four-wire)

### Power loss

Power loss, typ.

1.1 W

### Address area

Address space per module

- Address space per module, max.

4 byte; + 1 byte for QI information

### Hardware configuration

Selection of BaseUnit for connection variants

- 1-wire connection
- 2-wire connection
- 4-wire connection

BU type A0, A1

BU type A0, A1

BU type A0, A1

### Analog inputs

Number of analog inputs

2

- For current measurement

2

permissible input current for current input (destruction limit), max.

50 mA

Cycle time (all channels), min.

500  $\mu$ s

Input ranges (rated values), currents

- 0 to 20 mA

Yes; 15 bit

— Input resistance (0 to 20 mA)	130 Ω; 90 ohms with two wires
• -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; 15 bit
— Input resistance (4 mA to 20 mA)	130 Ω; 90 ohms with two wires

<b>Cable length</b>	
• shielded, max.	1 000 m

### Analog value generation for the inputs

Measurement principle	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 / off
• Conversion time (per channel)	50 ms @ 60 Hz, 60 ms @ 50 Hz, 180 ms @ 16.6 Hz, 500 μs without filter

### Smoothing of measured values

• Number of smoothing levels	4
• parameterizable	Yes
• Step: None	Yes; 1x conversion time
• Step: low	Yes; 4x conversion time
• Step: Medium	Yes; 8x conversion time
• Step: High	Yes; 16x conversion time

### Encoder

#### Connection of signal encoders

• 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), (+/-)	0.01 %
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

• Current, relative to input range, (+/-)	0.5 %
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#### Basic error limit (operational limit at 25 °C)

• Current, relative to input range, (+/-)	0.3 %
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#### Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$ , $f1 =$ interference frequency

• Series mode interference (peak value of interference < rated value of input range), min.	70 dB
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- Common mode voltage, max. 10 V
- Common mode interference, min. 90 dB

### 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; Short-circuit of the encoder supply
- Group error Yes
- Overflow/underflow Yes

#### Diagnostics indication LED

- Monitoring of the supply voltage (PWR-LED) Yes; green PWR LED
- Channel status display Yes; green LED
- for channel diagnostics No
- for module diagnostics Yes; green/red DIAG LED

### Potential separation

#### Potential separation channels

- between the channels No
- between the channels and backplane bus Yes
- between the channels and the power supply of the electronics Yes

### Permissible potential difference

between the inputs (UCM) 10 Vpp

### 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
<b>Weights</b>	
Weight, approx.	32 g
<b>last modified:</b>	05/09/2020