

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"> FW update possible 	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC05
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 	V13 SP1
<ul style="list-style-type: none"> STEP 7 configurable/integrated as of version 	V5.5 SP3
<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 	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.	45 mA; without sensor supply
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Encoder supply

24 V encoder supply

- | | |
|----------------------------|---|
| • 24 V | Yes |
| • Short-circuit protection | Yes |
| • Output current, max. | 50 mA; Total current for both channels (two-wire) |

Additional 24 V encoder supply

- | | |
|----------------------------|---|
| • 24 V | Yes |
| • Short-circuit protection | Yes; Module-wise |
| • Output current, max. | 200 mA; Total current for both channels (four-wire) |

Power loss

Power loss, typ.	1.1 W
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Address area

Address space per module

- | | |
|----------------------------------|-------------------------------------|
| • Address space per module, max. | 4 byte; + 1 byte for QI information |
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Hardware configuration

Selection of BaseUnit for connection variants

- | | |
|---------------------|----------------|
| • 1-wire connection | BU type A0, A1 |
| • 2-wire connection | BU type A0, A1 |
| • 4-wire connection | 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 μ 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 |

<ul style="list-style-type: none"> • -20 mA to +20 mA <ul style="list-style-type: none"> — Input resistance (-20 mA to +20 mA) • 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) 	Yes; 16 bit incl. sign 130 Ω Yes; 15 bit 130 Ω; 90 ohms with two wires
Cable length	
<ul style="list-style-type: none"> • 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

<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 / off
<ul style="list-style-type: none"> • 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

<ul style="list-style-type: none"> • Number of smoothing levels 	4
<ul style="list-style-type: none"> • parameterizable 	Yes
<ul style="list-style-type: none"> • Step: None 	Yes; 1x conversion time
<ul style="list-style-type: none"> • Step: low 	Yes; 4x conversion time
<ul style="list-style-type: none"> • Step: Medium 	Yes; 8x conversion time
<ul style="list-style-type: none"> • Step: High 	Yes; 16x conversion time

Encoder

Connection of signal encoders

<ul style="list-style-type: none"> • for current measurement as 2-wire transducer <ul style="list-style-type: none"> — Burden of 2-wire transmitter, max. 	Yes 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
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 %
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Basic error limit (operational limit at 25 °C)

<ul style="list-style-type: none"> • Current, relative to input range, (+/-) 	0.3 %
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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

- 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

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. 32 g

last modified:

02/14/2020