

SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 2X U/I 2-,4-WIRE HIGH FEAT., FITS TO BU-TYPE A0, A1, COLOR CODE CC05, CHANNEL DIAGNOSIS, 16BIT, +/-0,1%



General information	
Product type designation	AI 2xU/I 2-/4-wire HF
Firmware version	V1.0
<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	CC03
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>Scalable measuring range</li> </ul>	No
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul>	V13
<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>PCS 7 configurable/integrated as of version</li> </ul>	V8.1 SP1
<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>	GSDML V2.3
Operating mode	
<ul style="list-style-type: none"> <li>Oversampling</li> </ul>	No

- MSI

No

### CiR - Configuration in RUN

Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes

### 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 (rated value)	39 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 (two-wire)
Additional 24 V encoder supply	
• Output current, max.	100 mA; max. 150 mA for a duration of < 10 s (four-wire)

### Power loss

Power loss, typ.	0.95 W; without sensor supply
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### Address area

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

### Analog inputs

Number of analog inputs	2; Differential inputs
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	50 mA
Input ranges (rated values), voltages	
• 0 to +10 V	Yes; 15 bit
• Input resistance (0 to 10 V)	75 kΩ
• 1 V to 5 V	Yes; 15 bit
• Input resistance (1 V to 5 V)	75 kΩ
• -10 V to +10 V	Yes; 16 bit incl. sign
• Input resistance (-10 V to +10 V)	75 kΩ
• -5 V to +5 V	Yes; 16 bit incl. sign
• Input resistance (-5 V to +5 V)	75 kΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes; 15 bit

• Input resistance (0 to 20 mA)	130 Ω
• -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

<b>Cable length</b>	
• shielded, max.	1 000 m; 200 m for voltage measurement

### 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 / 300 / 600 / 1 200 / 2 400 / 4 800
• Basic execution time of the module (all channels released)	1 ms

### Smoothing of measured values

• Number of levels	6; none; 2-/4-/8-/16-/32-fold
• parameterizable	Yes

### Encoder

#### Connection of signal encoders

• for voltage measurement	Yes
• 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), (+/-)	0.003 %/K
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input area), (+/-)	0.01 %

#### Operational error limit in overall temperature range

• Voltage, relative to input area, (+/-)	0.1 %
• Current, relative to input area, (+/-)	0.1 %

#### Basic error limit (operational limit at 25 °C)

• Voltage, relative to input area, (+/-)	0.05 %; 0.1 % at SFU 4.8 kHz
• Current, relative to input area, (+/-)	0.05 %; 0.1 % at SFU 4.8 kHz

#### Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$ , f1 = interference frequency

• Common mode voltage, max.	35 V
• Common mode interference, min.	90 dB

Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	800 $\mu$ s
Bus cycle time (TDP), min.	1 ms
Jitter, max.	5 $\mu$ s

Interrupts/diagnostics/status information	
<b>Alarms</b>	
• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case
<b>Diagnostic messages</b>	
• Diagnostics	Yes
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Measuring range 4 to 20 mA only
• Short-circuit	Yes; For 1 to 5 V or for current measuring ranges short-circuit in encoder supply
• Group error	Yes
• Overflow/underflow	Yes
<b>Diagnostics indication LED</b>	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED

Potential separation	
<b>Potential separation channels</b>	
• between the channels	Yes
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes

Permissible potential difference	
between different circuits	75 V DC/60 V AC (base isolation)
between the inputs (UCM)	75V DC/60V AC

Isolation	
Isolation tested with	707 V DC (type test)

Dimensions	
Width	15 mm

Weights	
Weight, approx.	32 g

**last modified:** 12.09.2015