

SIMATIC ET 200SP, Analog input module, AI 2x U/I 2-/4-wire High Feat., suitable for BU type A0, A1, Color code CC05, channel diagnostics, 16 bit, +/-0.1%



General information	
Product type designation	AI 2xU/I 2-/4-wire HF
HW functional status	From FS06
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	CC03
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Isochronous mode 	Yes
<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
<ul style="list-style-type: none"> STEP 7 configurable/integrated as of version 	V5.5 / -
<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	
• Oversampling	No
• MSI	Yes
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
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	
• Short-circuit protection	Yes; channel by channel
• 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
Address area	
Address space per module	
• Address space per module, max.	4 byte; + 4 byte for scaling of measured values, + 1 byte for QI information
Hardware configuration	
Selection of BaseUnit for connection variants	
• 2-wire connection	BU type A0, A1
• 4-wire connection	BU type A0, A1
Analog inputs	
Number of analog inputs	2; Differential inputs
• For current measurement	2
• For voltage measurement	2
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	50 mA
Analog input with oversampling	No

Standardization of measured values	Yes
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • 0 to +10 V <ul style="list-style-type: none"> — Input resistance (0 to 10 V) • 1 V to 5 V <ul style="list-style-type: none"> — Input resistance (1 V to 5 V) • -10 V to +10 V <ul style="list-style-type: none"> — Input resistance (-10 V to +10 V) • -5 V to +5 V <ul style="list-style-type: none"> — Input resistance (-5 V to +5 V) 	<ul style="list-style-type: none"> Yes; 15 bit 75 kΩ Yes; 15 bit 75 kΩ Yes; 16 bit incl. sign 75 kΩ Yes; 16 bit incl. sign 75 kΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA <ul style="list-style-type: none"> — Input resistance (0 to 20 mA) • -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) 	<ul style="list-style-type: none"> Yes; 15 bit 130 Ω Yes; 16 bit incl. sign 130 Ω Yes; 15 bit 130 Ω
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m; 200 m for voltage measurement
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) • Interference voltage suppression for interference frequency f1 in Hz • Conversion time (per channel) • Basic execution time of the module (all channels released) 	<ul style="list-style-type: none"> 16 bit Yes 67.5 / 22.5 / 18.75 / 10 / 5 / 2.5 / 1.25 / 0.625 ms 68.03 / 22.83 / 19.03 / 10.28 / 5.23 / 2.68 / 1.43 / 0.730 ms 16.6 / 50 / 60 / 300 / 600 / 1 200 / 2 400 / 4 800 68.2 / 23 / 19.2 / 10.45 / 5.40 / 2.85 / 1.6 / 0.9 ms 1 ms
Smoothing of measured values	
<ul style="list-style-type: none"> • Number of smoothing levels • parameterizable 	<ul style="list-style-type: none"> 6; none; 2-/4-/8-/16-/32-fold Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement • for current measurement as 2-wire transducer <ul style="list-style-type: none"> — Burden of 2-wire transmitter, max. 	<ul style="list-style-type: none"> Yes Yes 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 range), (+/-)	0.01 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.1 %
• Current, relative to input range, (+/-)	0.1 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %; 0.1 % at SFU 4.8 kHz
• Current, relative to input range, (+/-)	0.05 %; 0.1 % at SFU 4.8 kHz
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
• Common mode voltage, max.	35 V
• Common mode interference, min.	90 dB

Isochronous mode

Filtering and processing time (TCI), min.	800 μ s
Bus cycle time (TDP), min.	1 ms
Jitter, max.	5 μ s

Interrupts/diagnostics/status information

Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Measuring range 4 to 20 mA only
• Short-circuit	Yes; channel-by-channel, at 1 to 5 V or for short-circuit in 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	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED

Potential separation

Potential separation channels	
• between the channels	Yes
• 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: 05/09/2020