



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	
• 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
• Isochronous mode	Yes
• Measuring range scalable	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V13
• STEP 7 configurable/integrated from version	V5.5 / -
• PCS 7 configurable/integrated from version	V8.1 SP1
• PROFIBUS from GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher
• PROFINET from 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	
<ul style="list-style-type: none"> Address space per module, max. 	4 byte; + 4 byte for scaling of measured values, + 1 byte for QI information
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> Mechanical coding element Type of mechanical coding element 	Yes Type A
Selection of BaseUnit for connection variants	
<ul style="list-style-type: none"> 2-wire connection 4-wire connection 	BU type A0, A1 BU type A0, A1
Analog inputs	
Number of analog inputs	2; Differential inputs
<ul style="list-style-type: none"> For current measurement For voltage measurement 	2 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) 	Yes; 15 bit 75 k Ω Yes; 15 bit 75 k Ω Yes; 16 bit incl. sign 75 k Ω Yes; 16 bit incl. sign 75 k Ω
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) 	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) 	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 	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. for current measurement as 4-wire transducer 	Yes Yes 650 Ω 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
Diagnoses	
• 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; < 0 °C as of FS06
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS06
• 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: 8/16/2023 