



SIMATIC ET 200SP, Analog input module, AI 4xTC High Speed, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.1%

General information	
Product type designation	AI 4xTC HS
HW functional status	From FS02
Firmware version	
• FW update possible	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color-coded label	CC00
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
• Measuring range scalable	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V15 with HSP 265/integrated as of V15.1
• STEP 7 configurable/integrated from version	V5.5 SP3 or higher
• 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)	37 mA
Current consumption, max.	50 mA
Power loss	
Power loss, typ.	0.9 W
Address area	
Address space per module	
• Address space per module, max.	16 byte; + 1 byte for QI information
Hardware configuration	

Automatic encoding	Yes
• Mechanical coding element	Yes
• Type of mechanical coding element	Type A
Selection of BaseUnit for connection variants	
• 2-wire connection	BU type A0, A1
Analog inputs	
Number of analog inputs	4
permissible input voltage for voltage input (destruction limit), max.	30 V
Cycle time (all channels), min.	5 ms; Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Input ranges (rated values), voltages	
• -1 V to +1 V	Yes; 16 bit incl. sign
— Input resistance (-1 V to +1 V)	1 MΩ
• -250 mV to +250 mV	Yes; 16 bit incl. sign
— Input resistance (-250 mV to +250 mV)	1 MΩ
• -50 mV to +50 mV	Yes; 16 bit incl. sign
— Input resistance (-50 mV to +50 mV)	1 MΩ
• -80 mV to +80 mV	Yes; 16 bit incl. sign
— Input resistance (-80 mV to +80 mV)	1 MΩ
Input ranges (rated values), thermocouples	
• Type B	Yes; 16 bit incl. sign
— Input resistance (Type B)	1 MΩ
• Type C	Yes; 16 bit incl. sign
— Input resistance (Type C)	1 MΩ
• Type E	Yes; 16 bit incl. sign
— Input resistance (Type E)	1 MΩ
• Type J	Yes; 16 bit incl. sign
— Input resistance (type J)	1 MΩ
• Type K	Yes; 16 bit incl. sign
— Input resistance (Type K)	1 MΩ
• Type L	Yes; 16 bit incl. sign
— Input resistance (Type L)	1 MΩ
• Type N	Yes; 16 bit incl. sign
— Input resistance (Type N)	1 MΩ
• Type R	Yes; 16 bit incl. sign
— Input resistance (Type R)	1 MΩ
• Type S	Yes; 16 bit incl. sign
— Input resistance (Type S)	1 MΩ
• Type T	Yes; 16 bit incl. sign
— Input resistance (Type T)	1 MΩ
• Type U	Yes; 16 bit incl. sign
— Input resistance (Type U)	1 MΩ
• Type TXK/TXK(L) to GOST	Yes; 16 bit incl. sign
— Input resistance (Type TXK/TXK(L) to GOST)	1 MΩ
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— Reference channel of the module	No
— internal comparison point	Yes; with BaseUnit type A1
— Reference channel of the group	Yes
— Number of reference channel groups	4; Group 0 to 3
— fixed reference temperature	Yes
Cable length	
• shielded, max.	200 m; 100 m for thermocouples
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
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"> Basic conversion time, including integration time (ms) <ul style="list-style-type: none"> — additional processing time for wire-break check 	1 ms
<ul style="list-style-type: none"> Interference voltage suppression for interference frequency f_1 in Hz 	16.6 / 50 / 60 Hz / off
<ul style="list-style-type: none"> Conversion time (per channel) 	180/60/50/1.25 ms
Smoothing of measured values	
<ul style="list-style-type: none"> Number of smoothing levels 	4; None; 4/8/16 times
<ul style="list-style-type: none"> parameterizable 	Yes
<ul style="list-style-type: none"> Step: None 	Yes
<ul style="list-style-type: none"> Step: low 	Yes
<ul style="list-style-type: none"> Step: Medium 	Yes
<ul style="list-style-type: none"> Step: High 	Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> for voltage measurement 	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.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.03 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) 	0.1 %; 0.3 % when SFU OFF
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) 	0.05 %; 0.2 % when SFU OFF
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. 	60 V; DC
<ul style="list-style-type: none"> Common mode interference, min. 	90 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes
<ul style="list-style-type: none"> Limit value alarm 	Yes; two upper and two lower limit values in each case
Diagnoses	
<ul style="list-style-type: none"> Monitoring the supply voltage 	Yes
<ul style="list-style-type: none"> Wire break 	Yes; channel by channel
<ul style="list-style-type: none"> Group error 	Yes
<ul style="list-style-type: none"> Overflow/Underflow 	Yes; channel by channel
Diagnostics indication LED	
<ul style="list-style-type: none"> Monitoring of the supply voltage (PWR-LED) 	Yes; green PWR LED
<ul style="list-style-type: none"> Channel status display 	Yes; green LED
<ul style="list-style-type: none"> for channel diagnostics 	Yes; red LED
<ul style="list-style-type: none"> for module diagnostics 	Yes; green/red LED
Potential separation	
Potential separation channels	
<ul style="list-style-type: none"> between the channels 	No
<ul style="list-style-type: none"> between the channels and backplane bus 	Yes
<ul style="list-style-type: none"> between the channels and the power supply of the electronics 	Yes
Permissible potential difference	
between the inputs (UCM)	60 V DC
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for applications according to AMS 2750	Yes; Declaration of Conformity, see online support entry 109757262
Suitable for applications according to CQI-9	Yes; Based on AMS 2750 E

Ecological footprint	
• environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	9.32 kg
— global warming potential, (during production) [CO2 eq]	4.97 kg
— global warming potential, (during operation) [CO2 eq]	4.79 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.449 kg

Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; < 0 °C as of FS02
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS02
• 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

Absolute humidity	
• dew point, min.	-60 °C; suitable for dry room applications

Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm

Weights	
Weight, approx.	33 g

Classifications			
		Version	Classification
	eClass	14	27-24-26-01
	eClass	12	27-24-26-01
	eClass	9.1	27-24-26-01
	eClass	9	27-24-26-01
	eClass	8	27-24-26-01
	eClass	7.1	27-24-26-01
	eClass	6	27-24-26-01
	ETIM	10	EC001596
	ETIM	9	EC001596
	ETIM	8	EC001596
	ETIM	7	EC001596
	IDEA	4	3562
	UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

[Miscellaneous](#)

[Manufacturer Declaration](#)



[Declaration of Conformity](#)



General Product Approval **For use in hazardous locations**



[FM](#)

[CCC-Ex](#)

For use in hazardous locations **Maritime application**



[Type Examination Certificate](#)



[Miscellaneous](#)

[CCC-Ex](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



Maritime application

Environment

[CCS \(China Classification Society\)](#)

[KR \(Korean Register of Shipping\)](#)



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