



Figure similar

SIMATIC, electronic module for ET200iSP, 4 AI, TC: for connection of thermocouples (voltage measurement), Ex ib (ia Ga) IIC T4 Gb, Ex ib [ia IIIC Da] IIC T4 Gb, Ex ib [ia] I Mb

General information	
Product brand name	SIMATIC
Product family	ET 200iSP
Product category	Analog module input
Product type designation	4AI TC
HW functional status	7
Firmware version	V1.0.1
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Installation type/mounting	
Rack mounting	No
Front mounting	Yes
Rail mounting	Yes
Wall mounting/direct mounting	No
Supply voltage	
Type of supply voltage	DC
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	17 mA
from load voltage (power bus), max.	30 mA
Power loss	
Power loss, typ.	0.4 W
Hardware configuration	
Fieldbus connection via separate transceiver	Yes
Analog inputs	
Number of analog inputs	4
Cycle time (all channels) max.	320 ms; 66 ms basic conversion time x 4 channels with interference frequency suppression 60 Hz, 80 ms basic conversion time x 4 channels with interference frequency suppression 50 Hz
Technical unit for temperature measurement adjustable	Yes
Input ranges	
• Voltage	Yes
• Current	No
• Thermocouple	Yes
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	

• -80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	1 000 kΩ
Input ranges (rated values), thermocouples	
• Type B	Yes
— Input resistance (Type B)	1 000 kΩ
• Type C	Yes
— Input resistance (Type C)	1 000 kΩ
• Type E	Yes
— Input resistance (Type E)	1 000 kΩ
• Type J	Yes
— Input resistance (type J)	1 000 kΩ
• Type K	Yes
— Input resistance (Type K)	1 000 kΩ
• Type L	Yes
— Input resistance (Type L)	1 000 kΩ
• Type N	Yes
— Input resistance (Type N)	1 000 kΩ
• Type R	Yes
— Input resistance (Type R)	1 000 kΩ
• Type S	Yes
— Input resistance (Type S)	1 000 kΩ
• Type T	Yes
— Input resistance (Type T)	1 000 kΩ
• Type U	Yes
— Input resistance (Type U)	1 000 kΩ
Thermocouple (TC)	
Temperature compensation	
— internal temperature compensation	Yes; via supplied TC sensor module
— external temperature compensation with compensations socket	Yes; via temperature value, acquired by an analog module of the same ET 200iSP station
Characteristic linearization	
• parameterizable	Yes
— for thermocouples	Yes
Cable length	
• shielded, max.	50 m
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes
• Basic conversion time, including integration time (ms)	80 ms at 50 Hz; 66 ms at 60 Hz
— additional conversion time for wire-break monitoring	5 ms
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes; in 4 stages
• Step: None	Yes; 1x cycle time
• Step: low	Yes; 4x cycle time
• Step: Medium	Yes; 32x cycle time
• Step: High	Yes; 64x cycle time
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.015 %
Temperature error (relative to input range), (+/-)	0.02 %/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, (+/-)	0.15 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.1 %

Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB
• Common mode interference, min.	90 dB
Interfaces	
Number of PROFINET interfaces	0
Protocols	
Supports protocol for PROFINET IO	No
PROFIsafe	No
PROFIBUS	No
Further protocols	
• other bus systems	No
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable
Diagnoses	
• Diagnostic information readable	Yes
• Wire-break	Yes; $R > 1.7 \text{ k}\Omega$
Diagnostics indication LED	
• Group error SF (red)	Yes
Ex(i) characteristics	
Module for Ex(i) protection	Yes; for more Co/Lo combinations, see certificate IECEx KEM 05.0008
maximum values for connecting terminals for gas group IIC	
• U_o (no-load voltage), max.	5.9 V
• I_o (short-circuit current), max.	15 mA
• P_o (power output), max.	23 mW
• C_o (permissible external capacity), max.	43 μF
• L_o (permissible external inductivity), max.	100 mH
Potential separation	
between channels and powerbus	Yes
Potential separation analog inputs	
• between the channels	Yes; Functional
• between the channels and backplane bus	Yes
Degree and class of protection	
IP degree of protection	IP30
Standards, approvals, certificates	
CE mark	CE 0344
UKCA mark	DEKRA 21UKEX0086 Importer UK: Siemens plc Manchester M20 2UR
cULus	LISTED E334384
FM approval	CLASSIFIED 3025852
Suitable for safety functions	No
INMETRO certificate	UL-BR 12.0071
reference designation according to IEC 81346-2 (2009)	K
Highest safety class achievable in safety mode	
• acc. to EN 954	n.a.
• Performance level according to ISO 13849-1	none
• SIL acc. to IEC 61508	No
Use in hazardous areas	
• ATEX marking	II 2 G (1) G Ex ib [ia Ga] IIC T4 Gb II 2 G (1) D Ex ib [ia IIIC Da] IIC T4 Gb I M2 Ex ib [ia] I Mb
• IECEx	IECEx KEM 05.0008
• CCC Ex	2020322316002943
• EAC Ex	PB Ex ib [ia] I Mb 1Ex ib [ia Ga] IIC T4 Gb [Ex ia Da] IIIC
• FM marking	Class I, Zone 1 AEx ib [ia] IIC T4 Ex ib IIC T4 NI, Class I, DIV.2, GP. A,B,C,D T4 AIS, Class I, DIV.1, GP. A,B,C,D T4 DIP Class II, III, GP. E,F,G
• Explosion protection category for gas	ATEX gas explosion protection, Zone 1
• Explosion protection category for dust	ATEX dust explosion protection, Zone 21 always install in corresponding enclosure
• associated equipment (Ex ia)	Yes

• associated equipment (Ex ib)	Yes
Marine approval	
• Germanischer Lloyd (GL)	Yes
• American Bureau of Shipping (ABS)	Yes
• Bureau Veritas (BV)	Yes
• Det Norske Veritas (DNV)	Yes
Connection method	
Design of electrical connection	Screw/spring-type terminal
Dimensions	
Width	30 mm
Height	129 mm
Depth	136.5 mm
Weights	
Weight, approx.	230 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](#)

[China RoHS](#)

[Metrological Approval](#)

[KC](#)

General Product Approval

For use in hazardous locations



[FM](#)



[Miscellaneous](#)

For use in hazardous locations



[CCC-Ex](#)



[Miscellaneous](#)



For use in hazardous locations

Maritime application



[NK / Nippon Kaiji Ky-
okai](#)

Maritime application

Environment



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