



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	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	<ul style="list-style-type: none"> Yes No Yes No No
Input ranges (rated values), voltages	

<ul style="list-style-type: none"> • -80 mV to +80 mV 	Yes
<ul style="list-style-type: none"> — Input resistance (-80 mV to +80 mV) 	1 000 kΩ
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • Type B 	Yes
<ul style="list-style-type: none"> — Input resistance (Type B) 	1 000 kΩ
<ul style="list-style-type: none"> • Type C 	Yes
<ul style="list-style-type: none"> — Input resistance (Type C) 	1 000 kΩ
<ul style="list-style-type: none"> • Type E 	Yes
<ul style="list-style-type: none"> — Input resistance (Type E) 	1 000 kΩ
<ul style="list-style-type: none"> • Type J 	Yes
<ul style="list-style-type: none"> — Input resistance (type J) 	1 000 kΩ
<ul style="list-style-type: none"> • Type K 	Yes
<ul style="list-style-type: none"> — Input resistance (Type K) 	1 000 kΩ
<ul style="list-style-type: none"> • Type L 	Yes
<ul style="list-style-type: none"> — Input resistance (Type L) 	1 000 kΩ
<ul style="list-style-type: none"> • Type N 	Yes
<ul style="list-style-type: none"> — Input resistance (Type N) 	1 000 kΩ
<ul style="list-style-type: none"> • Type R 	Yes
<ul style="list-style-type: none"> — Input resistance (Type R) 	1 000 kΩ
<ul style="list-style-type: none"> • Type S 	Yes
<ul style="list-style-type: none"> — Input resistance (Type S) 	1 000 kΩ
<ul style="list-style-type: none"> • Type T 	Yes
<ul style="list-style-type: none"> — Input resistance (Type T) 	1 000 kΩ
<ul style="list-style-type: none"> • Type U 	Yes
<ul style="list-style-type: none"> — Input resistance (Type U) 	1 000 kΩ
Thermocouple (TC)	
Temperature compensation	
<ul style="list-style-type: none"> — internal temperature compensation 	Yes; via supplied TC sensor module
<ul style="list-style-type: none"> — external temperature compensation with compensations socket 	Yes; via temperature value, acquired by an analog module of the same ET 200iSP station
Characteristic linearization	
<ul style="list-style-type: none"> • parameterizable 	Yes
<ul style="list-style-type: none"> — for thermocouples 	Yes
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	50 m
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) 	80 ms at 50 Hz; 66 ms at 60 Hz
<ul style="list-style-type: none"> — additional conversion time for wire-break monitoring 	5 ms
<ul style="list-style-type: none"> • Interference voltage suppression for interference frequency f_1 in Hz 	50 / 60 Hz
Smoothing of measured values	
<ul style="list-style-type: none"> • parameterizable 	Yes; in 4 stages
<ul style="list-style-type: none"> • Step: None 	Yes; 1x cycle time
<ul style="list-style-type: none"> • Step: low 	Yes; 4x cycle time
<ul style="list-style-type: none"> • Step: Medium 	Yes; 32x cycle time
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) 	0.15 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) 	0.1 %

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 interference, min. 	90 dB
Interfaces	
Number of PROFINET interfaces	0
Protocols	
Supports protocol for PROFINET IO	No
PROFIsafe	No
PROFIBUS	No
Further protocols	
<ul style="list-style-type: none"> other bus systems 	No
Interrupts/diagnostics/status information	
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes; Parameterizable
<ul style="list-style-type: none"> Limit value alarm 	Yes; Parameterizable
Diagnoses	
<ul style="list-style-type: none"> Diagnostic information readable 	Yes
<ul style="list-style-type: none"> Wire-break 	Yes; $R > 1.7 \text{ k}\Omega$
Diagnostics indication LED	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> U_o (no-load voltage), max. 	5.9 V
<ul style="list-style-type: none"> I_o (short-circuit current), max. 	15 mA
<ul style="list-style-type: none"> P_o (power output), max. 	23 mW
<ul style="list-style-type: none"> C_o (permissible external capacity), max. 	43 μF
<ul style="list-style-type: none"> L_o (permissible external inductivity), max. 	100 mH
Potential separation	
between channels and powerbus	Yes
Potential separation analog inputs	
<ul style="list-style-type: none"> between the channels 	Yes; Functional
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> acc. to EN 954 	n.a.
<ul style="list-style-type: none"> Performance level according to ISO 13849-1 	none
<ul style="list-style-type: none"> SIL acc. to IEC 61508 	No
Use in hazardous areas	
<ul style="list-style-type: none"> ATEX marking 	II 2 G (1) G Ex ib [ja Ga] IIC T4 Gb II 2 G (1) D Ex ib [ia IIIC Da] IIC T4 Gb I M2 Ex ib [ia] I Mb
<ul style="list-style-type: none"> IECEx 	IECEx KEM 05.0008
<ul style="list-style-type: none"> CCC Ex 	2020322316002943
<ul style="list-style-type: none"> EAC Ex 	PB Ex ib [ia] I Mb 1Ex ib [ja Ga] IIC T4 Gb [Ex ia Da] IIIC
<ul style="list-style-type: none"> FM marking 	Class I, Zone 1 AEx ib [ja] 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
<ul style="list-style-type: none"> Explosion protection category for gas 	ATEX gas explosion protection, Zone 1
<ul style="list-style-type: none"> Explosion protection category for dust 	ATEX dust explosion protection, Zone 21 always install in corresponding enclosure
<ul style="list-style-type: none"> 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](#)



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 Kyokai](#)

Maritime application

Environment



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