

SIEMENS

Product data sheet

6ES7331-7SF00-0AB0


SIMATIC S7, ANALOG INPUT SM 331,
OPTICALLY ISOLATED,
8 AI THERMOCOUPLE/4 AI PT100,
F. SIGNALS F. HAZARDOUS AREAS,
CAPABLE OF DIAGNOST., PTB-TESTED 1 X 20 PIN

Supply voltage	
Load voltage L+	
Rated value (DC)	24 V
Input current	
from backplane bus 5 V DC, max.	120 mA
Power losses	
Power loss, typ.	0.6 W
Analog inputs	
Number of analog inputs	8 ; 8x thermocouples; 4x RTD thermoresistors
Input ranges	
Thermocouple	Yes
Resistance thermometer	Yes
Input ranges (rated values), thermoelements	
Type B	Yes
Input resistance (Type B)	10 MΩ

Type E	Yes
Input resistance (Type E)	10 MΩ
Type J	Yes
Input resistance (type J)	10 MΩ
Type K	Yes
Input resistance (Type K)	10 MΩ
Type L	Yes
Input resistance (Type L)	10 MΩ
Type N	Yes
Input resistance (Type N)	10 MΩ
Type R	Yes
Input resistance (Type R)	10 MΩ
Type S	Yes
Input resistance (Type S)	10 MΩ
Type T	Yes
Input resistance (Type T)	10 MΩ
Type U	Yes
Input resistance (Type U)	10 MΩ
Input ranges (rated values), resistance thermometers	
Ni 100	Yes
Input resistance (Ni 100)	10 MΩ
Pt 100	Yes
Input resistance (Pt 100)	10 MΩ
Pt 200	Yes
Input resistance (Pt 200)	10 MΩ
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Cable length, shielded, max.	200 m ; TC: 50m
Analog value creation	
Measurement principle	Sigma Delta
Integrations and conversion time/ resolution per channel	
Resolution with overrange (bit including sign), max.	16 bit ; 10 to 15 bits + sign
Integration time, parameterizable	Yes ; 2.5 to 100 ms

Interference voltage suppression for interference frequency f1 in Hz	10 to 400 Hz
Encoder	
Connection of signal encoders	
for current measurement as 2-wire transducer	Yes
for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Temperature error (relative to input area)	Temperature error: 0.001 to 0.002 %/K
Operational limit in overall temperature range	
Resistance-type thermometer, relative to input area	0.09 to 0.04%
Basic error limit (operational limit at 25 °C)	
Resistance-type thermometer, relative to input area	+/- 0,1 %
Interference voltage suppression for $f = n \times (f_l \pm 1\%)$, f_l = interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	60 dB
Common mode interference, min.	130 dB
Interrupts/diagnostics/status information	
Diagnoses	
Diagnostic functions	Yes
Diagnostic information readable	Yes
Overrange	Yes
Wire break in signal transmitter cable	Yes
Short circuit of the signal encoder cable	Yes
Diagnostics indication LED	
Short circuit per channel (red)	Yes
Short-circuit group error (red)	Yes
Ex(i) characteristics	
Module for Ex(i) protection	Yes
Max. values of input circuits (per channel)	
Co (permissible external capacity), max.	43 µF
Io (short-circuit current), max.	28.8 mA
Lo (permissible external inductivity), max.	40 mH

Po (power of load), max.	41.4 mW
Uo (output no-load voltage), max.	5.9 V
Galvanic isolation	
Galvanic isolation analog inputs	
Galvanic isolation analog inputs	Yes
Permissible potential difference	
between the inputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
between inputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Ambient conditions	
Operating temperature	
max.	60 °C
Standards, approvals, certificates	
Use in hazardous areas	
Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4
Test number PTB	Ex-96.D.2108X
Connection method	
required front connector	20-pin
Weight	
Weight, approx.	210 g
Status	Sep 10, 2011