SIEMENS

Data sheet 6ES7331-7SF00-0AB0

SIMATIC S7, ANALOG INPUT SM 331, OPTICALLY ISOLATATED, 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 thermometer	
• 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
Cable length	
• shielded, max.	200 m; TC: 50 m

Analog value creation	
Measurement principle	Sigma Delta
Integration 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 range), (+/-)	Temperature error: 0.001 to 0.002 %/K
Operational limit in overall temperature range	
• Resistance thermometer, relative to input area, (+/-)	0.09 to 0.04%
Basic error limit (operational limit at 25 °C)	
• Resistance thermometer, relative to input area, (+/-)	0.1 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = 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	
Diagnostic messages	
• 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
Potential separation	
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
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
Ambient conditions	
Ambient temperature in operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Weights	

Weight, approx.	210 g

last modified: 23.04.2015