SIEMENS

Data sheet 6ES7331-7PE10-0AB0

Figure similar

SIMATIC S7-300, Analog input SM 331, single channel Isolated 250 V AC, 6 AI thermocouples Type B, E, J, K, L, N, R, S, T Voltage: +/-25MV to +/-1V 16 bit, 50ms, 1x 40-pole

Supply voltage	
Load voltage L+	
● Rated value (DC)	24 V
● Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	150 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	2.2 W
Analog inputs	
Number of analog inputs	6
permissible input voltage for voltage input (destruction limit), max.	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Constant measurement current for resistance-type transmitter, typ.	0.7 mA
Input ranges	
● Voltage	Yes
● Current	No
● Thermocouple	Yes
● Resistance thermometer	No
● Resistance	No
Input ranges (rated values), voltages	
● 0 to +10 V	No
● 1 V to 5 V	No
● 1 V to 10 V	No
● -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	10 MΩ
● -10 V to +10 V	No
● -2.5 V to +2.5 V	No
● -250 mV to +250 mV	Yes
— Input resistance (-250 mV to +250 mV)	10 MΩ
● -5 V to +5 V	No
● -50 mV to +50 mV	Yes
— Input resistance (-50 mV to +50 mV)	10 MΩ
● -500 mV to +500 mV	Yes
— Input resistance (-500 mV to +500 mV)	10 MΩ
● -80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	10 MΩ
Input ranges (rated values), currents	
● 0 to 20 mA	No

● -10 mA to +10 mA	No
● -20 mA to +20 mA	No
● -3.2 mA to +3.2 mA	No
● 4 mA to 20 mA	No
Input ranges (rated values), thermocouples	
● Type B	Yes
— Input resistance (Type B)	10 MΩ
● Type C	Yes
— Input resistance (Type C)	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
● Type TXK/TXK(L) to GOST	Yes
— Input resistance (Type TXK/TXK(L) to GOST)	10 MΩ
Input ranges (rated values), resistance thermometer	
● Cu 10	No
● Ni 100	No
● Ni 1000	No
● LG-Ni 1000	No
● Ni 120	No
● Ni 200	No
● Ni 500	No
● Pt 100	No
● Pt 1000	No
● Pt 200	No
● Pt 500	No
Input ranges (rated values), resistors	
● 0 to 150 ohms	No
● 0 to 300 ohms	No
● 0 to 600 ohms	No
● 0 to 6000 ohms	No
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— internal temperature compensation	Yes
— external temperature compensation with Pt100	Yes
— external temperature compensation with compensations socket	Yes
— for definable comparison point temperature	Yes
Characteristic linearization	
● parameterizable	Yes
— for thermocouples	Type B, E, J, K, L, N, R, S. T, U, C, TXK, XK(L)
— for resistance thermometer	No
Cable length	
● shielded, max.	200 m
Analog value generation for the inputs	

Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	16 bit; Two's complement
● Integration time, parameterizable	Yes
● Basic conversion time (ms)	30 / 50 / 60 / 300 ms
● Integration time (ms)	10/ 16.67/ 20/ 100 ms
● Interference voltage suppression for interference frequency f1 in Hz	10 / 50 / 60 / 400 Hz
Encoder	
Connection of signal encoders	
● for voltage measurement	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
● Voltage, relative to input range, (+/-)	Operating error at 0 ... 60 °C: ±0.12% @ ±25 mV, ±0.08% @ ±50 mV, ±0.6% @ ±80 mV, ±0.05% @ ±250 mV, ±0.05% @ 500 mV, ±0.05% @ ±1 V
● Thermocouple, relative to input range, (+/-)	See manual for details
Basic error limit (operational limit at 25 °C)	
● Voltage, relative to input range, (+/-)	See manual for details
● Thermocouple, relative to input range, (+/-)	See manual for details
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
● Diagnostic alarm	Yes; channel by channel
● Limit value alarm	Yes; Parameterizable
● Hardware interrupt	Yes; Parameterizable
Diagnoses	
● Diagnostic information readable	Yes
Diagnostics indication LED	
● Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
● between the channels	Yes
● between the channels, in groups of	1
● between the channels and backplane bus	Yes
● between the channels and the power supply of the electronics	Yes
Isolation	
Isolation tested with	2 500 V DC
connection method	
required front connector	40-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	272 g

last modified: 3/2/2021