



SIMATIC S7-300, ANALOG INPUT SM 331,
INDIVIDUALLY ISOLATED AC250V,
6 AI THERMOCOUPLE, TYPE B, E, J, K, L,
N, R, S,
T VOLTAGE: +/-25MV BIS +/-1V 16 BIT,
50 MS, 1 X 40 PIN

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 losses	
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)
Input ranges	
Voltage	Yes
Current	No
Thermocouple	Yes
Resistance thermometer	No
Resistance	No

Input ranges (rated values), voltages	
0 to +10 V	No
1 to 5 V	No
1 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 to +10 mA	No
-20 to +20 mA	No
-3.2 to +3.2 mA	No
4 to 20 mA	No
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
Type TXK/TXK(L) to GOST	Yes
Input resistance (Type TXK/TXK(L) to GOST)	10 MΩ
Input ranges (rated values), resistance thermometers	
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)	
for thermocouples	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)
Temperature compensation	
Parameterizable	Yes
internal temperature compensation	Yes
external temperature compensation with compensations socket	Yes
external temperature compensation with Pt100	Yes
Resistance thermometer (RTD)	
Characteristic linearization	
for resistance thermometer	No
Characteristic linearization	
Parameterizable	Yes
Cable length	
Cable length, shielded, max.	200 m

Analog value creation	
Measurement principle	integrating
Integrations 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
Integration time, ms	10 / 16,67 / 20 / 100
Errors/accuracies	
Operational limit in overall temperature range	
Voltage, relative to input area	+/- 1 %/K
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Alarms	
Diagnostic alarm	Yes ; channel by channel
Limit value alarm	Yes ; Parameterizable
Diagnostic messages	
Diagnostic functions	Yes ; Parameterizable
Diagnostic information readable	Yes
Diagnostics	Yes
Group error	Yes
Diagnostics indication LED	
Group error SF (red)	Yes
Galvanic isolation	
Galvanic isolation analog inputs	
between the channels	Yes
between the channels, in groups of	1
between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	2500 V DC
Connection method	
required front connector	40-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	272 g

