SIEMENS

Product data sheet 6ES7331-7KF02-0AB0

SIMATIC S7-300, ANALOG INPUT SM 331,
OPTICALLY ISOLATED, 8AI,
RESOLUTION 9/12/14 BITS,
U/I/THERMOCOUPLE/RESISTANCE INTERRUPT,
DIAGNOSTICS;
1X20PIN REMOVE/INSERT W. BACKPLANE BUS

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Supply voltage	
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	50 mA
Power losses	
Power loss, typ.	1 W
Analog inputs	
Number of analog inputs	8
Number of analog inputs for resistance measurement	4
permissible input voltage for voltage input (destruction limit), max.	20 V ; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
Voltage	Yes
Current	Yes
Thermocouple	Yes
Resistance thermometer	Yes

Resistance	Yes
Input ranges (rated values), voltages	
0 to +10 V	No
1 to 5 V	Yes
Input resistance (1 to 5 V)	100 kΩ
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	Yes
Input resistance (-10 V to +10 V)	100 kΩ
-2.5 V to +2.5 V	Yes
Input resistance (-2.5 V to +2.5 V)	100 kΩ
-250 mV to +250 mV	Yes
Input resistance (-250 mV to +250 mV)	10 MΩ
-5 V to +5 V	Yes
Input resistance (-5 V to +5 V)	100 kΩ
-50 mV to +50 mV	No
-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	Yes
Input resistance (0 to 20 mA)	25 Ω
-10 to +10 mA	Yes
Input resistance (-10 to +10 mA)	25 Ω
-20 to +20 mA	Yes
Input resistance (-20 to +20 mA)	25 Ω
-3.2 to +3.2 mA	Yes
Input resistance (-3.2 to +3.2 mA)	25 Ω
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	25 Ω
Input ranges (rated values), thermoelements	
Type B	No
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	No
Type S	No
Type T	No
Type U	No
Type TXK/TXK(L) to GOST	No
Input ranges (rated values), resistance thermometers	
Cu 10	No
Ni 100	Yes ; Standard
Input resistance (Ni 100)	10 MΩ
Ni 1000	No
LG-Ni 1000	No
Ni 120	No
Ni 200	No
Ni 500	No
Pt 100	Yes ; Standard
Input resistance (Pt 100)	10 MΩ
Pt 1000	No
Pt 200	No
Pt 500	No
Input ranges (rated values), resistors	
0 to 150 ohms	Yes
Input resistance (0 to 150 ohms)	10 MΩ
0 to 300 ohms	Yes
Input resistance (0 to 300 ohms)	10 MΩ
0 to 600 ohms	Yes
Input resistance (0 to 600 ohms)	10 MΩ
0 to 6000 ohms	No
Thermocouple (TC)	
for thermocouples	Type E, J, K, L, N
Temperature compensation	
Parameterizable	Yes
internal temperature compensation	Yes
external temperature compensation with compensations socket	Yes

Resistance thermometer (RTD)	
Characteristic linearization	
for resistance thermometer	Pt100 (standard, climatic range), Ni100 (standard, climatic range)
Characteristic linearization	
Parameterizable	Yes
Cable length	
Cable length, shielded, max.	200 m ; 50 m at 80 mV and thermocouples
Analog value creation	
Measurement principle	integrating
Integrations and conversion time/ resolution per channel	
Resolution with overrange (bit including sign), max.	15 bit ; Unipolar: 9/12/12/14 bits; bipolar: 9 bits + sign/12 bits + sign/12 bits + sign/14 bits + sign
Integration time, parameterizable	Yes ; 2.5/ 16.67/ 20/ 100 ms
Basic conversion time, ms	3 / 17 / 22 /102 ms
Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz
Encoder	
Connection of signal encoders	
for current measurement as 2-wire transducer	Yes
for current measurement as 4-wire transducer	Yes
for resistance measurement with 2-conductor connection	Yes
for resistance measurement with 3-conductor connection	Yes
for resistance measurement with 4-conductor connection	Yes
Errors/accuracies	
Operational limit in overall temperature range	
Voltage, relative to input area	+/- 1 % ; +/-1% (80 mV); +/-0.6% (250 to 1000 mV); +/-0.8% (2.5 to 10 V)
Current, relative to input area	+/- 0,7 % ; From 3.2 to 20 mA
Impedance, relative to input area	+/- 0,7 % ; 150, 300, 600 Ohm
Resistance-type thermometer, relative to input area	+/- 0,7 % ; +/-0.7% (Pt100/ Ni100); +/-0.8% (Pt100 climate)
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input area	+/- 0,6 % ; +/-0.4% (250 to 1000 mV); +/-0.6 % (2.5 to 10 mV); +/-0.7 % (80 mV)
Current, relative to input area	+/- 0,5 % ; 3.2 to 20 mA
Impedance, relative to input area	+/- 0,5 % ; 150, 300, 600 Ohm
Resistance-type thermometer, relative to input area	+/- 0,6 % ; +/-0.5% (Pt100/ Ni100); +/-0.6% (Pt100 climate)
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	

Alarms	
Diagnostic alarm	Yes ; Parameterizable, channels 0 and 2
Limit value alarm	Yes ; Parameterizable
Diagnostic messages	
Diagnostic functions	Yes ; Parameterizable
Diagnostic information readable	Yes
Diagnostics	Yes
Diagnostics indication LED	
Group error SF (red)	Yes
Galvanic isolation	
Galvanic isolation analog inputs	
between the channels	No
between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	500 V DC
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	250 g
Status	Aug 20, 2013