## Simons 6ES7 307-1KA01-0AA0 SITOP Simatic S7-300 Power Supply



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# **SIEMENS**

#### **Data sheet**

6ES7331-7KF02-0AB0



SIMATIC S7-300, Analog input SM 331, isolated, 8 Al, Resolution 9/12/14 bits, U/l/thermocouple/resistor, alarm, diagnostics, 1x 20-pole Removing/inserting with active backplane bus

Figure similar

Supply voltage	
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	30 mA
from backplane bus 5 V DC, max.	50 mA
Power loss	
Power loss, typ.	1 W
Analog inputs	
Number of analog inputs	8
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
Constant measurement current for resistance-type transmitter, typ.	1.67 mA
Input ranges	
<ul><li>Voltage</li></ul>	Yes
<ul><li>Current</li></ul>	Yes
<ul> <li>Thermocouple</li> </ul>	Yes
<ul> <li>Resistance thermometer</li> </ul>	Yes
Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	No
• 1 V to 5 V	Yes
<ul><li>— Input resistance (1 V to 5 V)</li></ul>	100 kΩ
• 1 V to 10 V	No
• -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	10 ΜΩ
• -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 ΜΩ
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	100 kΩ

50 1/1 :50 1/	N.
• -50 mV to +50 mV	No
• -500 mV to +500 mV	Yes
— Input resistance (-500 mV to +500 mV)	10 ΜΩ
• -80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	10 ΜΩ
Input ranges (rated values), currents	V
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	25 Ω
• -10 mA to +10 mA	Yes
— Input resistance (-10 mA to +10 mA)	25 Ω
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	25 Ω
• -3.2 mA to +3.2 mA	Yes $25 \Omega$
<ul><li>Input resistance (-3.2 mA to +3.2 mA)</li><li>4 mA to 20 mA</li></ul>	
	Yes $25 \Omega$
— Input resistance (4 mA to 20 mA)  Input ranges (rated values), thermocouples	25 Ω
	No
<ul><li>Type B</li><li>Type C</li></ul>	No
• Type C	Yes
— Input resistance (Type E)	10 ΜΩ
• Type J	Yes
Input resistance (type J)	10 ΜΩ
• Type K	Yes
Input resistance (Type K)	10 ΜΩ
• Type L	Yes
— Input resistance (Type L)	10 ΜΩ
• Type N	Yes
Input resistance (Type N)	10 ΜΩ
• Type R	No
• Type S	No
• Type T	No
• Type U	No
<ul> <li>Type TXK/TXK(L) to GOST</li> </ul>	No
Input ranges (rated values), resistance thermometer	
• Cu 10	No
• Ni 100	Yes; Standard
<ul><li>— Input resistance (Ni 100)</li></ul>	10 ΜΩ
• Ni 1000	No
• LG-Ni 1000	No
• Ni 120	No
• Ni 200	No
● Ni 500	No
• Pt 100	Yes; Standard
<ul><li>— Input resistance (Pt 100)</li></ul>	10 ΜΩ
• Pt 1000	No
• Pt 200	No
• Pt 500	No
Input ranges (rated values), resistors	Voc
• 0 to 150 ohms	Yes
— Input resistance (0 to 150 ohms)	10 ΜΩ
• 0 to 300 ohms	Yes 10 $M\Omega$
<ul><li>— Input resistance (0 to 300 ohms)</li><li>• 0 to 600 ohms</li></ul>	Yes
<ul><li>U to 600 onms</li><li>— Input resistance (0 to 600 ohms)</li></ul>	Yes $10~\mathrm{M}\Omega$
Input resistance (0 to 600 onms)     0 to 6000 ohms	No
Thermocouple (TC)	110
Temperature compensation	
— parameterizable	Yes
internal temperature compensation	Yes

	V
<ul> <li>external temperature compensation with compensations socket</li> </ul>	Yes
for definable comparison point temperature	Yes
Characteristic linearization	
parameterizable	Yes
— for thermocouples	Type E, J, K, L, N
— for resistance thermometer	Pt100 (standard, climatic range), Ni100 (standard, climatic range)
Cable length	r troo (standard, dimitato rango), rivroo (standard, dimitato rango)
• shielded, max.	200 m; 50 m at 80 mV and thermocouples
Analog value generation for the inputs	200 III, 50 III at 60 IIIV and thermocouples
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/12 bit + sign/12 bit + sign/14 bit + sign
<ul> <li>Integration time, parameterizable</li> </ul>	Yes; 2,5 / 16,67 / 20 / 100 ms
Basic conversion time (ms)	3 / 17 / 22 / 102 ms
Interference voltage suppression for interference	400 / 60 / 50 / 10 Hz
frequency f1 in Hz	4007 007 007 10 112
Encoder	
Connection of signal encoders	
for voltage measurement	Yes
for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire	Yes
connection	
<ul> <li>for resistance measurement with three-wire</li> </ul>	Yes
connection	
<ul> <li>for resistance measurement with four-wire connection</li> </ul>	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
<ul> <li>Voltage, relative to input range, (+/-)</li> </ul>	1 %; ±1% (80 mV); ±0.6% (250 mV to 1 000 mV); ±0.8% (2.5 V to 10 V)
<ul> <li>Current, relative to input range, (+/-)</li> </ul>	0.7 %; From 3.2 to 20 mA
<ul> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.7 %; 150, 300, 600 Ohm
<ul> <li>Resistance thermometer, relative to input range, (+/-</li> </ul>	0.7 %; ±0.7 % (Pt100/ Ni100); ±0.8 % (Pt100 climate)
)	
Thermocouple, relative to input range, (+/-)	1.1 %; Type E, J, K, L, N
Basic error limit (operational limit at 25 °C)	
<ul> <li>Voltage, relative to input range, (+/-)</li> </ul>	0.6 %; ±0.4 % (250 mV to 1 000 mV); ±0.6 % (2.5 mV to 10 mV); ±0.7 %
	(80 mV)
<ul> <li>Current, relative to input range, (+/-)</li> </ul>	0.5 %; 3.2 to 20 mA
<ul> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.5 %; 150, 300, 600 Ohm
Resistance thermometer, relative to input range, (+/-	0.6 %; ±0.5% (Pt100/ Ni100), ±0.6% (Pt100 climate)
Thermoscuple, relative to input range (1/)	0.7.9/: Type F N
• Thermocouple, relative to input range, (+/-)	0.7 %; Type E, N, J, K, L
Interrupts/diagnostics/status information	Y 2
Diagnostics function	Yes; Parameterizable
Alarms	V D
Diagnostic alarm	Yes; Parameterizable, channels 0 and 2
Limit value alarm	Yes; Parameterizable
Diagnoses	v
Diagnostic information readable	Yes
Diagnostics indication LED	
Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
<ul> <li>between the channels and the power supply of the</li> </ul>	Yes
electronics	
Isolation	
Isolation tested with	500 V DC

Dimensions		
Width	40 mm	
Height	125 mm	
Depth	117 mm	
Weights		
Weight, approx.	250 g	

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