



Figure similar

SIPLUS S7-300 SM 331 8AI based on 6ES7331-1KF02-0AB0 with conformal coating, -25...+70 °C, isolated 8 AI, resolution 13 bit U/I/resistance/Pt100, NI100, NI1000, LG-NI1000, PTC/KTY, 66 ms conversion time; 1x 40-pole

Input current	
from backplane bus 5 V DC, max.	90 mA
Power loss	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	8
permissible input voltage for voltage input (destruction limit), max.	30 V; 12 V continuous, 30 V for max. 1 s
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 kΩ
• 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	100 kΩ
• 1 V to 10 V	No
• -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	100 kΩ
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	100 kΩ
• -2.5 V to +2.5 V	No
• -250 mV to +250 mV	No
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	100 kΩ
• -50 mV to +50 mV	Yes
— Input resistance (-50 mV to +50 mV)	100 kΩ
• -500 mV to +500 mV	Yes
— Input resistance (-500 mV to +500 mV)	100 kΩ
• -80 mV to +80 mV	No
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	100 Ω

<ul style="list-style-type: none"> • -10 mA to +10 mA 	No
<ul style="list-style-type: none"> • -20 mA to +20 mA <ul style="list-style-type: none"> — Input resistance (-20 mA to +20 mA) 	Yes 100 Ω
<ul style="list-style-type: none"> • -3.2 mA to +3.2 mA 	No
<ul style="list-style-type: none"> • 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) 	Yes 100 Ω
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • Type B 	No
<ul style="list-style-type: none"> • Type C 	No
<ul style="list-style-type: none"> • Type E 	No
<ul style="list-style-type: none"> • Type J 	No
<ul style="list-style-type: none"> • Type K 	No
<ul style="list-style-type: none"> • Type L 	No
<ul style="list-style-type: none"> • Type N 	No
<ul style="list-style-type: none"> • Type R 	No
<ul style="list-style-type: none"> • Type S 	No
<ul style="list-style-type: none"> • Type T 	No
<ul style="list-style-type: none"> • Type U 	No
<ul style="list-style-type: none"> • Type TXK/TXK(L) to GOST 	No
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Cu 10 	No
<ul style="list-style-type: none"> • Ni 100 <ul style="list-style-type: none"> — Input resistance (Ni 100) 	Yes; Standard/climate 100 MΩ
<ul style="list-style-type: none"> • Ni 1000 <ul style="list-style-type: none"> — Input resistance (Ni 1000) 	Yes 100 MΩ
<ul style="list-style-type: none"> • LG-Ni 1000 <ul style="list-style-type: none"> — Input resistance (LG-Ni 1000) 	Yes; Standard/climate 100 MΩ
<ul style="list-style-type: none"> • Ni 120 	No
<ul style="list-style-type: none"> • Ni 200 	No
<ul style="list-style-type: none"> • Ni 500 	No
<ul style="list-style-type: none"> • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) 	Yes; Standard/climate 100 MΩ
<ul style="list-style-type: none"> • Pt 1000 	No
<ul style="list-style-type: none"> • Pt 200 	No
<ul style="list-style-type: none"> • Pt 500 	No
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> • 0 to 150 ohms 	No
<ul style="list-style-type: none"> • 0 to 300 ohms 	No
<ul style="list-style-type: none"> • 0 to 600 ohms <ul style="list-style-type: none"> — Input resistance (0 to 600 ohms) 	Yes 100 MΩ
<ul style="list-style-type: none"> • 0 to 6000 ohms <ul style="list-style-type: none"> — Input resistance (0 to 6000 ohms) 	Yes 100 MΩ
Characteristic linearization	
<ul style="list-style-type: none"> • parameterizable <ul style="list-style-type: none"> — for resistance thermometer 	Yes yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	200 m; max. 50 m at 50 mV
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	13 bit
<ul style="list-style-type: none"> • Integration time, parameterizable 	Yes; 60 / 50 ms
<ul style="list-style-type: none"> • Basic conversion time (ms) 	66 / 55 ms
<ul style="list-style-type: none"> • Interference voltage suppression for interference frequency f1 in Hz 	50 / 60 Hz
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement 	Yes
<ul style="list-style-type: none"> • for current measurement as 2-wire transducer 	Yes; with external supply
<ul style="list-style-type: none"> • for current measurement as 4-wire transducer 	Yes

<ul style="list-style-type: none"> • for resistance measurement with two-wire connection 	Yes
<ul style="list-style-type: none"> • for resistance measurement with three-wire connection 	Yes
<ul style="list-style-type: none"> • for resistance measurement with four-wire connection 	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) 	0.6 %; $\pm 0.6\%$ ($\pm 5\text{ V}$, 10 V, 1 to 5 V, 0 to 10 V); $\pm 0.5\%$ ($\pm 50\text{ mV}$, 500 mV, 1 V) @ 0 ... +60 °C; $\pm 0.7\%$ ($\pm 5\text{ V}$, 10 V, 1 to 5 V, 0 to 10 V); $\pm 0.6\%$ ($\pm 50\text{ mV}$, 500 mV, 1 V) @ -25 ... +70 °C
<ul style="list-style-type: none"> • Current, relative to input range, (+/-) 	0.5 %; @ 0 ... +60 °C; $\pm 0.6\%$ @ -25 ... +70 °C; $\pm 20\text{ mA}$, 0 to 20 mA, 4 to 20 mA
<ul style="list-style-type: none"> • Resistance, relative to input range, (+/-) 	0.5 %; @ 0 ... +60 °C; 0.6% @ -25 ... +70 °C; 0 to 6 kohm, 0 to 600 kohm
<ul style="list-style-type: none"> • Resistance thermometer, relative to input range, (+/-) 	1 Kelvin (Pt100, Ni100, climate; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climate); 1.2 Kelvin (Pt100, Ni100, standard) @ 0 ... +60 °C; 1.2 Kelvin (Pt100, Ni100, climate; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climate); 1.4 Kelvin (Pt100, Ni100, standard) @ -25 ... +70 °C
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) 	0.4 %; 0.4% ($\pm 5\text{ V}$, 10 V, 1 to 5 V, 0 to 10 V); 0.3% ($\pm 50\text{ mV}$, 500 mV, 1 V)
<ul style="list-style-type: none"> • Current, relative to input range, (+/-) 	0.3 %; $\pm 20\text{ mA}$, 0 to 20 mA, 4 to 20 mA
<ul style="list-style-type: none"> • Resistance, relative to input range, (+/-) 	0.3 %; 0 to 6 kohms, 0 to 600 kohms
<ul style="list-style-type: none"> • Resistance thermometer, relative to input range, (+/-) 	1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)
Interrupts/diagnostics/status information	
Diagnostics function	No
Alarms	
<ul style="list-style-type: none"> • Diagnostic alarm 	No
<ul style="list-style-type: none"> • Limit value alarm 	No
Diagnoses	
<ul style="list-style-type: none"> • Diagnostic information readable 	No
Diagnostics indication LED	
<ul style="list-style-type: none"> • Group error SF (red) 	No
Potential separation	
Potential separation analog inputs	
<ul style="list-style-type: none"> • between the channels 	No
<ul style="list-style-type: none"> • between the channels and backplane bus 	Yes
Isolation	
Isolation tested with	500 V DC
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes; File E239877
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Railway application	
<ul style="list-style-type: none"> • EN 50121-4 	No
<ul style="list-style-type: none"> • EN 50155 	No
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • min. 	-25 °C
<ul style="list-style-type: none"> • max. 	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> • Installation altitude above sea level, max. 	5 000 m
<ul style="list-style-type: none"> • Ambient air temperature-barometric pressure-altitude 	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
<ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Resistance	
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
connection method / header	
required front connector	40-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm
Weights	
Weight, approx.	250 g
last modified:	12/18/2020 