

SIPLUS S7-300 SM331 8AE -25 ... +70 DEGREES C WITH CONFORMAL COATING BASED ON 6ES7331-1KF02-0AB0 . OPTICALLY ISOLATED, 8 AI, 13 BIT RESOLUTION, U//RESISTANCE/PT100, NI100, NI1000, LG-NI1000, PTC / KTY, 66 MS MODULE UPDATE, 1 X 40 PIN



Figure similar

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 k Ω
• 1 V to 5 V	Yes
• Input resistance (1 V to 5 V)	100 k Ω
• 1 V to 10 V	No
• -1 V to +1 V	Yes
• Input resistance (-1 V to +1 V)	100 k Ω
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	100 k Ω
• -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 k Ω
• -50 mV to +50 mV	Yes
• Input resistance (-50 mV to +50 mV)	100 k Ω
• -500 mV to +500 mV	Yes
• Input resistance (-500 mV to +500 mV)	100 k Ω
• -80 mV to +80 mV	No

Input ranges (rated values), currents

• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	100 Ω
• -10 mA to +10 mA	No
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	100 Ω
• -3.2 mA to +3.2 mA	No
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	100 Ω

Input ranges (rated values), thermocouples

• Type B	No
• Type C	No
• Type E	No
• Type J	No
• Type K	No
• Type L	No
• Type N	No
• Type R	No
• Type S	No
• Type T	No
• Type U	No
• Type TXK/TXK(L) to GOST	No

Input ranges (rated values), resistance thermometer	
• Cu 10	No
• Ni 100	Yes; Standard/climate
• Input resistance (Ni 100)	100 MΩ
• Ni 1000	Yes
• Input resistance (Ni 1000)	100 MΩ
• LG-Ni 1000	Yes; Standard/climate
• Input resistance (LG-Ni 1000)	100 MΩ
• Ni 120	No
• Ni 200	No
• Ni 500	No
• Pt 100	Yes; Standard/climate
• Input resistance (Pt 100)	100 MΩ
• 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	Yes
• Input resistance (0 to 600 ohms)	100 MΩ
• 0 to 6000 ohms	Yes
• Input resistance (0 to 6000 ohms)	100 MΩ
Characteristic linearization	
• parameterizable — for resistance thermometer	Yes yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.
Cable length	
• shielded, max.	200 m; max. 50 m at 50 mV
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	13 bit
• Integration time, parameterizable	Yes; 60 / 50 ms
• Basic conversion time (ms)	66 / 55 ms
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes; with external supply

- for current measurement as 4-wire transducer
- for resistance measurement with two-wire connection
- for resistance measurement with three-wire connection
- for resistance measurement with four-wire connection

Yes
Yes
Yes
Yes

Errors/accuracies

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-) 0.6 %; $\pm 0.6\%$ ($\pm 5\text{ V}$, 10 V , $1\text{ to }5\text{ V}$, $0\text{ to }10\text{ V}$); $\pm 0.5\%$ ($\pm 50\text{ mV}$, 500 mV , 1 V) @ $0\text{ ... }+60\text{ }^\circ\text{C}$; $\pm 0.7\%$ ($\pm 5\text{ V}$, 10 V , $1\text{ to }5\text{ V}$, $0\text{ to }10\text{ V}$); $\pm 0.6\%$ ($\pm 50\text{ mV}$, 500 mV , 1 V) @ $-25\text{ ... }+70\text{ }^\circ\text{C}$
- Current, relative to input range, (+/-) 0.5% ; @ $0\text{ ... }+60\text{ }^\circ\text{C}$; $\pm 0.6\%$ @ $-25\text{ ... }+70\text{ }^\circ\text{C}$; $\pm 20\text{ mA}$, $0\text{ to }20\text{ mA}$, $4\text{ to }20\text{ mA}$
- Resistance, relative to input range, (+/-) 0.5% ; @ $0\text{ ... }+60\text{ }^\circ\text{C}$; 0.6% @ $-25\text{ ... }+70\text{ }^\circ\text{C}$; $0\text{ to }6\text{ kohm}$, $0\text{ to }600\text{ kohm}$
- 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) @ $0\text{ ... }+60\text{ }^\circ\text{C}$; 1.2 Kelvin (Pt100, Ni100, climate; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climate); 1.4 Kelvin (Pt100, Ni100, standard) @ $-25\text{ ... }+70\text{ }^\circ\text{C}$

Basic error limit (operational limit at $25\text{ }^\circ\text{C}$)

- Voltage, relative to input range, (+/-) 0.4% ; 0.4% ($\pm 5\text{ V}$, 10 V , $1\text{ to }5\text{ V}$, $0\text{ to }10\text{ V}$); 0.3% ($\pm 50\text{ mV}$, 500 mV , 1 V)
- Current, relative to input range, (+/-) 0.3% ; $\pm 20\text{ mA}$, $0\text{ to }20\text{ mA}$, $4\text{ to }20\text{ mA}$
- Resistance, relative to input range, (+/-) 0.3% ; $0\text{ to }6\text{ kohms}$, $0\text{ to }600\text{ kohms}$
- 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

- Diagnostic alarm No
- Limit value alarm No

Diagnostic messages

- Diagnostic information readable No

Diagnostics indication LED

- Group error SF (red) No

Potential separation

Potential separation analog inputs

- 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	
• EN 50121-4	No
• EN 50155	No

Ambient conditions

Ambient temperature during operation	
• min.	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• 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	
• 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; *
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high availability

- Military testing according to MIL-I-46058C, Amendment 7
- Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A

Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

Connection method

required front connector 40-pin

Dimensions

Width 40 mm

Height 125 mm

Depth 117 mm

Weights

Weight, approx. 250 g

last modified: 12/14/2018