

SIPLUS S7-300 SM 331 40-pole -25...+70 °C with conformal coating
 Conformity with EN 50155 T1 Kat 1 KI A/B based on 6ES7331-7NF00-0AB0 . Analog input isolated "8 AI; +/-5/10 V, 1-5 V, +/-20 mA, 0/4 to 20 mA, 16 bit (55ms), Single rooting (50 V COM.)



Figure similar

Input current	
from backplane bus 5 V DC, max.	130 mA
Power loss	
Power loss, typ.	0.6 W
Analog inputs	
Number of analog inputs	8
permissible input voltage for voltage input (destruction limit), max.	50 V; Permanent
permissible input current for current input (destruction limit), max.	32 mA
Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	

- 0 to +10 V No
- 1 V to 5 V Yes
- Input resistance (1 V to 5 V) 2 M Ω
- 1 V to 10 V No
- -1 V to +1 V No
- -10 V to +10 V Yes
- Input resistance (-10 V to +10 V) 2 M 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) 2 M Ω
- -50 mV to +50 mV No
- -500 mV to +500 mV No
- -80 mV to +80 mV No

Input ranges (rated values), currents

- 0 to 20 mA Yes
- Input resistance (0 to 20 mA) 250 Ω
- -20 mA to +20 mA Yes
- Input resistance (-20 mA to +20 mA) 250 Ω
- -3.2 mA to +3.2 mA No
- 4 mA to 20 mA Yes
- Input resistance (4 mA to 20 mA) 250 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 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
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign
• Integration time, parameterizable	Yes; 10/ 16.67/ 20/ 100 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; with external transmitter; possible with separate supply for transmitter
• for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.1 %; @ Ucm = 0 V; @ Ucm = ±50 V: ±0.7 % - @ 0 ... +60 °C; ±0.5 % @ Ucm = 0 V; @ Ucm = ±50 V: ±0.9 % - @ -25 ... +70 °C;
• Current, relative to input range, (+/-)	0.3 %; @ Ucm = 0 V; @ Ucm = ±50 V: ±0.4 % @ 0 ... +60 °C; ±0.5% @ Ucm = 0 V; @ Ucm = ±50 V: ±0.6% @ -25 ... +70 °C
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %
• Current, relative to input range, (+/-)	0.05 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable, channels 0 and 2
Diagnostic messages	

• Diagnostic information readable	Yes
Diagnostics indication LED	
• Group error SF (red)	Yes
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	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class A/B, EN 50155:2007
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
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 land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 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
• Electronic equipment on rolling stock acc. to EN 50155	Yes; Class PC2 protective coating acc. to EN 50155:2017
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	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.	272 g
last modified:	12/14/2018