SIEMENS

Data sheet 6AG1331-1KF02-7AB0

SIPLUS S7-300 SM331 8AE -25 ... +70°C with conformal coating based on 6ES7331-1KF02-0AB0 . OPTICALLY ISOLATED, 8 AI, 13 BIT RESOLUTION, U/I/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 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
• -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	Yes
— for resistance thermometer	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

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 voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes; with external supply

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

Errors/accuracies

Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.6 %; ±0.6 % (±5 V, 10 V, 1 to 5 V, 0 to 10 V); ±0.5 % (±50 mV, 500 mV, 1 V) @ 0 ... +60 °C; ±0.7 % (±5 V, 10 V, 1 to 5 V, 0 to 10 V); ±0.6 % (±50 mV, 500 mV, 1 V) @ -25 ... +70 °C
• Current, relative to input range, (+/-)	0.5 %; @ 0 ... +60 °C; ±0.6% @ -25 ... +70 °C; ±20 mA, 0 to 20 mA, 4 to 20 mA
• Resistance, relative to input range, (+/-)	0.5 %; @ 0 ... +60 °C; 0.6% @ -25 ... +70 °C; 0 to 6 kohm, 0 to 600 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 ... +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)	
• Voltage, relative to input range, (+/-)	0.4 %; 0.4% (±5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (±50 mV, 500 mV, 1 V)
• Current, relative to input range, (+/-)	0.3 %; ±20 mA, 0 to 20 mA, 4 to 20 mA
• Resistance, relative to input range, (+/-)	0.3 %; 0 to 6 kohms, 0 to 600 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
Diagnoses	
• Diagnostic information readable	No
Diagnostics indication LED	
• Group error SF (red)	No

Potential separation

Potential separation analog inputs	
• between the channels	No
• 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; *
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	
required front connector	40-pin

Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm

Weights	
Weight, approx.	250 g

last modified: 10/09/2020