

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

#### Input ranges (rated values), currents

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

#### 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 %;  $\pm 0.6$  % ( $\pm 5$  V, 10 V, 1 to 5 V, 0 to 10 V);  $\pm 0.5$  % ( $\pm 50$  mV, 500 mV, 1 V) @ 0 ... +60 °C;  $\pm 0.7$  % ( $\pm 5$  V, 10 V, 1 to 5 V, 0 to 10 V);  $\pm 0.6$  % ( $\pm 50$  mV, 500 mV, 1 V) @ -25 ... +70 °C
- Current, relative to input range, (+/-) 0.5 %; @ 0 ... +60 °C;  $\pm 0.6$  % @ -25 ... +70 °C;  $\pm 20$  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% ( $\pm 5$  V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% ( $\pm 50$  mV, 500 mV, 1 V)
- Current, relative to input range, (+/-) 0.3 %;  $\pm 20$  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

Diagnostic functions 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
FM approval	Yes; CofC 3028431
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 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; \*

from supply voltage 1L+

— Note regarding classification of environmental conditions acc. to EN 60721

\* 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:**

05/16/2018