



Figure similar

SIPLUS S7-300 SM331 20-POLE -25 ... +70 DGR C WITH CONFORMAL COATING CONFORMITY WITH EN50155 T1 KAT 1 KL A/B BASED ON 6ES7331-7KF02-0AB0 . ANALOG INPUT GALVANICALLY ISOLATED 8 AI, AUFL. 9/12/14 BIT, U/I/THERMOEL./RESISTOR, ALARM, DIAGNOSTICS, 1 X 20-POLE, REMOVE/INSERT W.ACT. BACKPLANE BUS

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	50 mA
Power loss	
Power loss, typ.	1 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	4
permissible input voltage for voltage input (destruction limit), max.	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA

Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	Yes
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	No
• 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)	10 M Ω
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	100 k Ω
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	100 k Ω
• -250 mV to +250 mV	Yes
• Input resistance (-250 mV to +250 mV)	10 M Ω
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	100 k Ω
• -50 mV to +50 mV	No
• -500 mV to +500 mV	Yes
• Input resistance (-500 mV to +500 mV)	10 M Ω
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	10 M Ω
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	25 Ω
• -10 mA to +10 mA	Yes
• Input resistance (-10 mA to +10 mA)	25 Ω
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	25 Ω
• -3.2 mA to +3.2 mA	Yes
• Input resistance (-3.2 mA to +3.2 mA)	25 Ω
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	25 Ω
Input ranges (rated values), thermocouples	
• Type B	No
• Type C	No
• Type E	Yes

• Input resistance (Type E)	10 MΩ
• Type J	Yes
• Input resistance (type J)	10 MΩ
• Type K	Yes
• Input resistance (Type K)	10 MΩ
• Type L	No
• Type N	Yes
• Input resistance (Type N)	10 MΩ
• 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
• Input resistance (Ni 100)	10 MΩ
• Ni 1000	No
• LG-Ni 1000	No
• Ni 120	No
• Ni 200	No
• Ni 500	No
• Pt 100	Yes; Standard
• Input resistance (Pt 100)	10 MΩ
• Pt 1000	No
• Pt 200	No
• Pt 500	No
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• Input resistance (0 to 150 ohms)	10 MΩ
• 0 to 300 ohms	Yes
• Input resistance (0 to 300 ohms)	10 MΩ
• 0 to 600 ohms	Yes
• Input resistance (0 to 600 ohms)	10 MΩ
• 0 to 6000 ohms	No
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— internal temperature compensation	Yes
— external temperature compensation with compensations socket	Yes

Characteristic linearization	
- parameterizable — for thermocouples — for resistance thermometer	Yes Type E, J, K, L, N Pt100 (standard, climatic range), Ni100 (standard, climatic range)
Cable length	
shielded, max.	200 m; 50 m at 80 mV and thermocouples
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
- Resolution with overrange (bit including sign), max. - Integration time, parameterizable - Interference voltage suppression for interference frequency f1 in Hz	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/12 bit + sign/12 bit + sign/14 bit + sign Yes; 2,5 / 16,67 / 20 / 100 ms 400 / 60 / 50 / 10 Hz
Encoder	
Connection of signal encoders	
- for current measurement as 2-wire transducer - 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 Yes
Errors/accuracies	
Operational error limit in overall temperature range	
- Voltage, relative to input range, (+/-) - Current, relative to input range, (+/-) - Resistance, relative to input range, (+/-) - Resistance thermometer, relative to input range, (+/-)	1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V) @ 0 ... +60 °C; $\pm 1.3\%$ (80 mV); $\pm 0.8\%$ (250 mV to 1 000 mV); $\pm 1\%$ (2.5 V to 10 V) @ -25 ... +70 °C 0.7 %; @ 0 ... +60 °C; $\pm 0.9\%$ @ -25 ... +70 °C; from 3.2 mA to 20 mA 0.7 %; @ 0 ... +60 °C; $\pm 0.9\%$ @ -25 ... +70 °C; 150, 300, 600 ohm 0.7 %; $\pm 0.7\%$ (Pt100 / Ni100); $\pm 0.8\%$ (Pt100 climate) @ 0 ... +60 °C; $\pm 0.9\%$ (Pt100 / Ni100); $\pm 1\%$ (Pt100 climate) @ -25 ... +70 °C
Basic error limit (operational limit at 25 °C)	
- Voltage, relative to input range, (+/-) - Current, relative to input range, (+/-) - Resistance, relative to input range, (+/-) - Resistance thermometer, relative to input range, (+/-)	0.6 %; $\pm 0.4\%$ (250 mV to 1 000 mV); $\pm 0.6\%$ (2.5 mV to 10 mV); $\pm 0.7\%$ (80 mV) 0.5 %; 3.2 to 20 mA 0.5 %; 150, 300, 600 Ohm 0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)
Interrupts/diagnostics/status information	

Diagnostic functions	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable, channels 0 and 2
• Limit value alarm	Yes; Parameterizable
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
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	Yes; T1 Category 1 Class A/B horizontal mounting position
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
Relative humidity	
— With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
— against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!

— against chemically active substances /
conformity with EN 60721-3-3

Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!

— against mechanically active substances /
conformity with EN 60721-3-3

Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Connection method

required front connector	20-pin
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Dimensions

Width	40 mm
Height	125 mm
Depth	120 mm

Weights

Weight, approx.	250 g
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last modified:	10/28/2016
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