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Data sheet 6ES7331-1KF02-0AB0



Figure similar

SIMATIC S7-300, ANALOG INPUT SM 331, 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

Input current	
from backplane bus 5 V DC, max.	90 mA
Power losses	
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

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• 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), thermoelements	
• Type B	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

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• 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
Thermocouple (TC)	
Temperature compensation	
— Parameterizable	No
— internal temperature compensation	No
— external temperature compensation with compensations socket	No
Characteristic linearization	
• Parameterizable	Yes
— for thermocouples	No
— 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 creation	
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	Yes

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• 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 limit in overall temperature range	
• Voltage, relative to input area, (+/-)	0.6 %; +/-0.6% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); +/-0.5% (+/-50 mV, 500 mV, 1 V)
• Current, relative to input area, (+/-)	0.5 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA
• Resistance, relative to input area, (+/-)	0.5 %; 0 to 6 kohms, 0 to 600 kohms
• Resistance thermometer, relative to input area, (+/-)	1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input area, (+/-)	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 area, (+/-)	0.3 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA
• Resistance, relative to input area, (+/-)	0.3 %; 0 to 6 kohms, 0 to 600 kohms
• Resistance thermometer, relative to input area, (+/-)	1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	No
• Limit value alarm	No
Diagnostic messages	
• Diagnostic functions	No
• Diagnostic information readable	No
• Diagnostics	No
• Group error	No
Diagnostics indication LED	
• Group error SF (red)	No
Potential separation	
Galvanic isolation analog inputs	
• between the channels	No
• between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	500 V DC

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Connection method	
required front connector	40-pin

Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm

Weights	
Weight, approx.	250 g

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