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Data sheet 6ES7431-1KF20-0AB0



Figure similar

SIMATIC S7-400, analog input SM 431, isolated 8 AI, resolution 14 bit, U/IResistor 8 AI, cycle time 0.416 ms

Supply voltage	
Load voltage L+	
● Rated value (DC)	24 V; Only required for supplying 2-wire transmitters
● Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	200 mA; for 8 connected, fully controlled 2-wire transmitters
from backplane bus 5 V DC, max.	1 000 mA
Power loss	
Power loss, typ.	4.9 W
Analog inputs	
Number of analog inputs	8
● For voltage/current measurement	8
● For resistance measurement	4
permissible input voltage for voltage input (destruction limit), max.	18 V; 18 V continuous, 75 V for 1 ms (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA; Permanent
Constant measurement current for resistance-type transmitter, typ.	1.67 mA
Input ranges	
● Voltage	Yes
● Current	Yes
● Thermocouple	No
● Resistance thermometer	No
● Resistance	Yes
Input ranges (rated values), voltages	
● 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	10 MΩ
● -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	10 MΩ
● -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	100 kΩ
Input ranges (rated values), currents	
● -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	50 Ω
● 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	50 kΩ
Input ranges (rated values), resistors	
● 0 to 600 ohms	Yes
Cable length	

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● shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	14 bit; 14 / 14 / 14
● Integration time, parameterizable	Yes
● Basic conversion time (ms)	52 µs
● Interference voltage suppression for interference frequency f1 in Hz	none / 400 / 60 / 50 Hz
● Time constant of the input filter	15 µs
● Basic execution time of the module (all channels released)	0.42 s
Encoder	
Connection of signal encoders	
● for voltage measurement	Yes; possible
● for current measurement as 2-wire transducer	Yes
● for current measurement as 4-wire transducer	Yes
● for resistance measurement with two-wire connection	Yes; Line resistances are also measured
● for resistance measurement with three-wire connection	Yes; Line resistances are also measured
● for resistance measurement with four-wire connection	Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	0.03 %/K
Operational error limit in overall temperature range	
● Voltage, relative to input range, (+/-)	0.7 %; ±0.7 % at ±1 V; ±0.9 % at ±10 V, 1 to 5 V
● Current, relative to input range, (+/-)	0.8 %; at ±20 mA, 4 to 20 mA
● Resistance, relative to input range, (+/-)	1 %
Basic error limit (operational limit at 25 °C)	
● Voltage, relative to input range, (+/-)	0.6 %; 0.6 % at ±1 V; 0.75 % at ±10 V, 1 to 5 V
● Current, relative to input range, (+/-)	0.7 %; at ±20 mA, 4 to 20 mA
● Resistance, relative to input range, (+/-)	0.7 %; 0 to 600 ohms
Interrupts/diagnostics/status information	
Diagnostics function	No
Potential separation	
Potential separation analog inputs	
● Potential separation analog inputs	Yes; internal/external
● between the channels	No
● between the channels and backplane bus	Yes
● Between the channels and load voltage L+	Yes
Isolation	
Isolation tested with	2 120 V DC between bus and analog section; 500 V DC between bus and local ground; 500 V DC between analog part and L+/M; 2 120 V DC between analog part and local ground; 2 120 V DC between L+/M and local ground
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Weights	
Weight, approx.	500 g

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