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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

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Cable length	
● 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 ms
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

Classifications

	Version	Classification
eClass	16	27-24-22-01
eClass	14	27-24-22-01
eClass	12	27-24-22-01
eClass	9.1	27-24-22-01
eClass	9	27-24-22-01
eClass	8	27-24-22-01
eClass	7.1	27-24-22-01
eClass	6	27-24-22-01

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ETIM	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval



Miscellaneous





Metrological Approval



General Product Approval



China RoHS

Miscellaneous

Manufacturer Declaration

EMV





For use in hazardous locations





FM





Type Examination Certificate

For use in hazardous locations



Maritime application









NK / Nippon Kaiji Kyokai

Maritime application







CCS (China Classification Society)

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