SIEMENS

Data sheet 6ES7431-1KF00-0AB0

SIMATIC S7-400, analog input SM 431, isolated 8 AI, resolution 13 bit, U/IResistor



Figure similar

Supply voltage	
Load voltage L+	
● Rated value (DC)	not necessary
Input current	
from backplane bus 5 V DC, max.	350 mA
Power loss	
Power loss, typ.	1.8 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.	50 V
permissible input current for current input (destruction limit), max.	50 mA; 40 mA continuous
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)	200 kΩ
● -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	200 kΩ
● -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	200 kΩ
Input ranges (rated values), currents	
● -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	80 Ω
● 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	80 Ω
Input ranges (rated values), resistors	
● 0 to 600 ohms	Yes
— Input resistance (0 to 600 ohms)	usable up to 500 ohms
Cable length	

© Copyright Siemens

● shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	13 bit
● Integration time, parameterizable	Yes
● Basic conversion time (ms)	23 / 25 ms
● Integration time (ms)	16,7 / 20 ms
● Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
● Basic execution time of the module (all channels released)	200 ms; 184 / 200 ms
Encoder	
Connection of signal encoders	
● for voltage measurement	Yes; possible
● for current measurement as 2-wire transducer	Yes; with external transmitter supply
● 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), (+/-)	0.02 %/K; ±0.02 %/K in impedance measuring range; ±0.007 % in all other measuring ranges
Operational error limit in overall temperature range	
● Voltage, relative to input range, (+/-)	1 %; ±1.0 % at ±1 V; ±0.6 % at ±10 V; ±0.7 % at 1 to 5 V
● Current, relative to input range, (+/-)	1 %; at ±20 mA, 4 to 20 mA
● Resistance, relative to input range, (+/-)	1.25 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)
Basic error limit (operational limit at 25 °C)	
● Voltage, relative to input range, (+/-)	0.7 %; 0.7% at ±1 V; 0.4% at ±10 V; 0.5% at 1 to 5 V
● Current, relative to input range, (+/-)	0.7 %; at ±20 mA, 4 to 20 mA
● Resistance, relative to input range, (+/-)	0.8 %; 0 to 500 ohms (4-conductor measurement, in range of 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
Isolation	
Isolation tested with	2 120 V DC between bus and analog part; 500 V DC between bus and local ground; 2 120 V DC between analog part and local ground
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Weights	
Weight, approx.	500 g

Classifications

	Version	Classification
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
ETIM	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420

© Copyright Siemens

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

Approvals / Certificates

General Product Approval



Miscellaneous



China RoHS



Metrological Approval

General Product Approval

KC



EMV





For use in hazardous locations



FM

For use in hazardous locations





Type Examination Certificate



Maritime application





Maritime application





NK / Nippon Kaiji Kyokai







Maritime application

CCS (China Classification Society)

last modified: 6/7/2025

© Copyright Siemens