

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



Figure similar

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 M Ω
• -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
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 k Ω
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
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 μ s
• Interference voltage suppression for interference frequency f1 in Hz	none / 400 / 60 / 50 Hz
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
- for resistance measurement with four-wire connection

Yes; Line resistances are also measured

Yes

Errors/accuracies

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

last modified: 10/09/2020