

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



Figure similar

Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> For voltage/current measurement 	8
<ul style="list-style-type: none"> 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
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 k Ω
• -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	200 k Ω
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	200 k Ω
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	
• 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
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

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	2120 V DC between bus and analog part; 500 V DC between bus and local ground; 2120 V DC between analog part and local ground
-----------------------	--

Dimensions

Width	25 mm
Height	290 mm
Depth	210 mm

Weights

Weight, approx.	500 g
-----------------	-------

last modified:	06/09/2020
-----------------------	------------