

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



Figure similar

<b>Supply voltage</b>	
Load voltage L+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	not necessary
<b>Input current</b>	
from backplane bus 5 V DC, max.	350 mA
<b>Power loss</b>	
Power loss, typ.	1.8 W
<b>Analog inputs</b>	
Number of analog inputs	8
<ul style="list-style-type: none"> <li>For voltage/current measurement</li> </ul>	8
<ul style="list-style-type: none"> <li>For resistance measurement</li> </ul>	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
<b>Input ranges</b>	

• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	No
• Resistance	Yes
<b>Input ranges (rated values), voltages</b>	
• 1 V to 5 V	Yes
• Input resistance (1 V to 5 V)	200 k $\Omega$
• -1 V to +1 V	Yes
• Input resistance (-1 V to +1 V)	200 k $\Omega$
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	200 k $\Omega$
<b>Input ranges (rated values), currents</b>	
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	80 $\Omega$
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	80 $\Omega$
<b>Input ranges (rated values), resistors</b>	
• 0 to 600 ohms	Yes
• Input resistance (0 to 600 ohms)	usable up to 500 ohms
<b>Cable length</b>	
• shielded, max.	200 m
<b>Analog value generation for the inputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• 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
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
• 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 %; $\pm 1.0$ % at $\pm 1$ V; $\pm 0.6$ % at $\pm 10$ V; $\pm 0.7$ % at 1 to 5 V |
| • Current, relative to input range, (+/-)    | 1 %; at $\pm 20$ 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 $\pm 1$ V; 0.4% at $\pm 10$ V; 0.5% at 1 to 5 V       |
| • Current, relative to input range, (+/-)    | 0.7 %; at $\pm 20$ mA, 4 to 20 mA                                    |
| • Resistance, relative to input range, (+/-) | 0.8 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms) |

## Potential separation

### Potential separation analog inputs

- |                                      |                        |
|--------------------------------------|------------------------|
| • Potential separation analog inputs | Yes; internal/external |
| • between the channels               | No                     |

## 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
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## Dimensions

Width	25 mm
Height	290 mm
Depth	210 mm

## Weights

Weight, approx.	500 g
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**last modified:** 07/17/2018