

SIMATIC S7-400, ANALOG INPUT SM 431, 8AI; 16 BIT RESOLUTION, U/I/THERMOEL., OPTIC. ISOLATED W. 1 POINT PER COMMON, DIAGN., ALARM, 20 MS MODULE UPDATE



Input current	
from load voltage L+ (without load), max.	400 mA
from backplane bus 5 V DC, max.	1 200 mA
Power losses	
Power loss, typ.	4.6 W
Hardware configuration	
Slots	
• Required slots	1
Analog inputs	
Number of analog inputs	8
Number of analog inputs for voltage/current measurement	8
permissible input voltage for voltage input (destruction limit), max.	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	32 mA
Input ranges	
• Voltage	Yes
• Current	Yes

• Thermocouple	Yes
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• 1 to 5 V	Yes
• Input resistance (1 to 5 V)	> 2000 ohms
• -1 V to +1 V	Yes
• -10 V to +10 V	Yes
• -100 mV to +100 mV	Yes
• -2.5 V to +2.5 V	Yes
• -20 mV to +20 mV	Yes
• -250 mV to +250 mV	Yes
• -5 V to +5 V	Yes
• -50 mV to +50 mV	Yes
• -500 mV to +500 mV	Yes
• -80 mV to +80 mV	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• -10 to +10 mA	Yes
• -20 to +20 mA	Yes
• -3.2 to +3.2 mA	Yes
• 4 to 20 mA	Yes
• Input resistance (4 to 20 mA)	50 Ω
• -5 to +5 mA	Yes
Input ranges (rated values), thermoelements	
• Type B	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type L	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type U	Yes
Thermocouple (TC)	
Temperature compensation	
— internal temperature compensation	Yes
— external temperature compensation with compensations socket	Yes
— dynamic reference temperature value	Yes
Characteristic linearization	
• Parameterizable	Yes

— for thermocouples

Type B, E, J, K, L, N, R, S, T, U

Cable length

- Cable length, shielded, max. 200 m

Analog value creation

Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max. 16 bit
- Integration time, parameterizable Yes
- Basic conversion time, ms 10 / 16,7 / 20 / 100
- Integration time, ms 2,5 / 16,7 / 20 / 100
- Basic conversion time, including integration time, ms 1 ms (module)
 - additional conversion time for wire break monitoring and resistance measurement
- Interference voltage suppression for interference frequency f1 in Hz 400 / 60 / 50 / 10 Hz

Encoder

Connection of signal encoders

- for current measurement as 4-wire transducer Yes
- for resistance measurement with four-wire connection Yes

Errors/accuracies

Operational limit in overall temperature range

- Voltage, relative to input area, (+/-) 0.3 %
- Current, relative to input area, (+/-) 0.5 %

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input area, (+/-) 0.1 %
- Current, relative to input area, (+/-) 0.17 %

Interrupts/diagnostics/status information

Alarms

- Diagnostic alarm Yes; Parameterizable
- Limit value alarm Yes

Diagnostic messages

- Diagnostics Yes

Galvanic isolation

Galvanic isolation analog inputs

- Galvanic isolation analog inputs Yes; internal/external
- between the channels Yes

Permissible potential difference

between the inputs (UCM) 120 V AC

Isolation

Isolation checked with

1500 V DC

Dimensions

Width	25 mm
Height	290 mm
Depth	210 mm

Weights

Weight, approx.	650 g
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