

SIMATIC S7-400, analog input SM 431, 8 AI, resolution 16 bit, U/I/Thermocouple, isolated with single rooting, diagnostics, alarm, 20 ms conversion time



Figure similar

Input current	
from backplane bus 5 V DC, max.	1 200 mA
Power loss	
Power loss, typ.	4.6 W
Analog inputs	
Number of analog inputs	8
• 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 V to 5 V	Yes
— Input resistance (1 V to 5 V)	> 2 000 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 mA to +10 mA	Yes
• -20 mA to +20 mA	Yes
• -3.2 mA to +3.2 mA	Yes
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	50 Ω
• -5 mA to +5 mA	Yes
Input ranges (rated values), thermocouples	
• Type B	Yes
— Input resistance (Type B)	> 2 000 ohms
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type L	Yes
• Type N	Yes
— Input resistance (Type N)	> 2 000 ohms
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type U	Yes
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— internal temperature compensation	Yes
— external temperature compensation with compensations socket	Yes
— dynamic reference temperature value	Yes

Characteristic linearization	
<ul style="list-style-type: none"> parameterizable — for thermocouples 	Yes Type B, E, J, K, L, N, R, S, T, U
Cable length	
<ul style="list-style-type: none"> shielded, max. 	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Basic conversion time (ms) Integration time (ms) Interference voltage suppression for interference frequency f1 in Hz 	16 bit Yes 10 / 16,7 / 20 / 100 2,5 / 16,7 / 20 / 100 400 / 60 / 50 / 10 Hz
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> for voltage measurement for current measurement as 4-wire transducer for resistance measurement with four-wire connection 	Yes; possible Yes Yes
Errors/accuracies	
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) 	0.3 % 0.5 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) 	0.1 % 0.17 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm Limit value alarm Hardware interrupt 	Yes; Parameterizable Yes Yes; Parameterizable
Diagnoses	
<ul style="list-style-type: none"> Diagnostic information readable 	Yes; possible
Potential separation	
Potential separation analog inputs	
<ul style="list-style-type: none"> Potential separation analog inputs between the channels between the channels and backplane bus 	Yes; internal/external Yes Yes

Isolation

Isolation tested with	1 500 V DC
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Dimensions

Width	25 mm
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Height	290 mm
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Depth	210 mm
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Weights

Weight, approx.	650 g
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last modified:	08/29/2020
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