



Figure similar

SIMATIC S7-400, analog input SM 431, 8 AI, resolution 16 bit, resistor/PT100/Ni100 isolated, diagnostics alarm, 20 ms conversion time

Input current	
from backplane bus 5 V DC, max.	650 mA
Power loss	
Power loss, typ.	3.3 W
Analog inputs	
Number of analog inputs	8
• For resistance 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)
Constant measurement current for resistance-type transmitter, typ.	1 mA
Input ranges	
• Voltage	No
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), resistance thermometer	
• Ni 100	Yes
— Input resistance (Ni 100)	> 10 000 ohms
• Ni 1000	Yes; Different characteristics selectable: Europe/U.S.
— Input resistance (Ni 1000)	> 10 000 ohms
• Pt 100	Yes
— Input resistance (Pt 100)	> 10 000 ohms
• Pt 1000	Yes
— Input resistance (Pt 1000)	> 10 000 ohms
• Pt 200	Yes
— Input resistance (Pt 200)	> 10 000 ohms
• Pt 500	Yes
— Input resistance (Pt 500)	> 10 000 ohms
Characteristic linearization	
• Parameterizable	Yes
— for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni1000; different characteristics selectable (Europe/U.S.)
Cable length	
• shielded, max.	200 m; 50 m with thermocouples and input ranges ± 80 mV
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit

• Integration time, parameterizable • Basic conversion time (ms) • Integration time (ms) • Interference voltage suppression for interference frequency f1 in Hz • Basic execution time of the module (all channels released)	Yes 8 / 23 / 25 ms 20 ms at 50 Hz (entire module incl. wire break) none/ 60 / 50 Hz 8 ms; 8 / 23 / 25 ms		
Encoder			
Connection of signal encoders			
• for resistance measurement with three-wire connection • for resistance measurement with four-wire connection	Yes Yes		
Errors/accuracies			
Operational error limit in overall temperature range			
• Resistance thermometer, relative to input range, (+/-)	±1 °C		
Basic error limit (operational limit at 25 °C)			
• Resistance thermometer, relative to input range, (+/-)	±0,2 °C		
Interrupts/diagnostics/status information			
Diagnostics function		Yes; Parameterizable	
Alarms			
• Diagnostic alarm • Limit value alarm • Hardware interrupt	Yes; Parameterizable Yes Yes; Parameterizable		
Diagnoses			
• Diagnostic information readable	Yes; possible		
Potential separation			
Potential separation analog inputs			
• Potential separation analog inputs • between the channels • between the channels and backplane bus	Yes; internal/external No Yes		
Isolation			
Isolation tested with		500 V DC	
Dimensions			
Width		25 mm	
Height		290 mm	
Depth		210 mm	
Weights			
Weight, approx.		650 g	
Classifications			
		Version	Classification
	eClass	16	27-24-22-01
	eClass	14	27-24-22-01
	eClass	12	27-24-22-01
	eClass	9.1	27-24-22-01
	eClass	9	27-24-22-01
	eClass	8	27-24-22-01
	eClass	7.1	27-24-22-01
	eClass	6	27-24-22-01
	ETIM	10	EC001420
	ETIM	9	EC001420
	ETIM	8	EC001420
	ETIM	7	EC001420
	IDEA	4	3562
	UNSPSC	15	32-15-17-05
Approvals / Certificates			
General Product Approval			



[Manufacturer Declaration](#)

[Miscellaneous](#)



[Metrological Approval](#)

General Product Approval

EMV



[China RoHS](#)

[Miscellaneous](#)

[Manufacturer Declaration](#)



EMV

For use in hazardous locations



[FM](#)



For use in hazardous locations

Maritime application

[Type Examination Certificate](#)



Maritime application

[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)

last modified:

6/7/2025