



SIMATIC S7-1200, Analog input, SM 1231 RTD, 4xAI RTD module

Figure similar

General information	
Product type designation	SM 1231, AI 4x16 bit RTD
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	No
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes
— Input resistance (Cu 10)	10 Ω
• Ni 100	Yes
— Input resistance (Ni 100)	100 Ω
• Ni 1000	Yes
— Input resistance (Ni 1000)	1 000 Ω
• LG-Ni 1000	Yes
— Input resistance (LG-Ni 1000)	1 000 Ω
• Ni 120	Yes
— Input resistance (Ni 120)	120 Ω
• Ni 200	Yes
— Input resistance (Ni 200)	200 Ω
• Ni 500	Yes
— Input resistance (Ni 500)	500 Ω
• Pt 100	Yes
— Input resistance (Pt 100)	100 Ω
• Pt 1000	Yes
— Input resistance (Pt 1000)	1 000 Ω

<ul style="list-style-type: none"> <li>• Pt 200 <ul style="list-style-type: none"> <li>— Input resistance (Pt 200)</li> </ul> </li> </ul>	Yes 200 Ω
<ul style="list-style-type: none"> <li>• Pt 500 <ul style="list-style-type: none"> <li>— Input resistance (Pt 500)</li> </ul> </li> </ul>	Yes 500 Ω
<b>Input ranges (rated values), resistors</b>	
<ul style="list-style-type: none"> <li>• 0 to 150 ohms</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• 0 to 300 ohms</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• 0 to 600 ohms</li> </ul>	Yes
<b>Thermocouple (TC)</b>	
Temperature compensation	
<ul style="list-style-type: none"> <li>— parameterizable</li> </ul>	No
<b>Analog value generation for the inputs</b>	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	15 bit; + sign
<ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>	No
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency <math>f_1</math> in Hz</li> </ul>	85 dB at 50 / 60 / 400 Hz
<b>Errors/accuracies</b>	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1$ = interference frequency	
<ul style="list-style-type: none"> <li>• Common mode interference, min.</li> </ul>	120 dB
<b>Interrupts/diagnostics/status information</b>	
Alarms	Yes
Diagnostics function	Yes; Can be read out
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Wire-break</li> </ul>	Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• for status of the inputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for maintenance</li> </ul>	Yes
<b>Degree and class of protection</b>	
IP degree of protection	IP20
<b>Standards, approvals, certificates</b>	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
<b>Ecological footprint</b>	
<ul style="list-style-type: none"> <li>• environmental product declaration</li> </ul>	Yes
Global warming potential	
<ul style="list-style-type: none"> <li>— global warming potential, (total) [CO2 eq]</li> </ul>	43.1 kg
<ul style="list-style-type: none"> <li>— global warming potential, (during production) [CO2 eq]</li> </ul>	7.62 kg
<ul style="list-style-type: none"> <li>— global warming potential, (during operation) [CO2 eq]</li> </ul>	36 kg
<ul style="list-style-type: none"> <li>— global warming potential, (after end of life cycle) [CO2 eq]</li> </ul>	-0.544 kg
<b>Ambient conditions</b>	
Free fall	
<ul style="list-style-type: none"> <li>• Fall height, max.</li> </ul>	0.3 m; five times, in product package
Ambient temperature during operation	
<ul style="list-style-type: none"> <li>• min.</li> </ul>	-20 °C
<ul style="list-style-type: none"> <li>• max.</li> </ul>	60 °C

• horizontal installation, min.	-20 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °C
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C
<b>Air pressure acc. to IEC 60068-2-13</b>	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
<b>Relative humidity</b>	
• Operation at 25 °C without condensation, max.	95 %
<b>Pollutant concentrations</b>	
• SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
<b>connection method</b>	
required front connector	Yes
<b>Mechanics/material</b>	
Enclosure material (front)	
• Plastic	Yes
<b>Dimensions</b>	
Width	45 mm
Height	100 mm
Depth	75 mm
<b>Weights</b>	
Weight, approx.	220 g
<b>last modified:</b>	10/9/2024 