

SIMATIC S7-1200 G2, SM 1231 RTD, AI 4x RTD module, Pt100 and Pt1000

General information	
Product type designation	SM 1231 RTD 4x 16 bit
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	15 mA
from backplane bus 5 V DC, typ.	65 mA
Power loss	
Power loss, typ.	0.6 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 • Current • Thermocouple • Resistance thermometer • Resistance	No No No Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000 Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
• Cu 10 — Input resistance (Cu 10) • Ni 100 — Input resistance (Ni 100) • Ni 1000 — Input resistance (Ni 1000) • LG-Ni 1000 — Input resistance (LG-Ni 1000) • Ni 120 — Input resistance (Ni 120) • Ni 200 — Input resistance (Ni 200) • Ni 500 — Input resistance (Ni 500) • Pt 100 — Input resistance (Pt 100) • Pt 1000 — Input resistance (Pt 1000) • Pt 200 — Input resistance (Pt 200) • Pt 500 — Input resistance (Pt 500)	Yes 10 Ω Yes 100 Ω Yes 1 000 Ω Yes 1 000 Ω Yes 120 Ω Yes 200 Ω Yes 500 Ω Yes 100 Ω Yes 1 000 Ω Yes 200 Ω Yes 500 Ω
Input ranges (rated values), resistors	
• 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms	Yes Yes Yes
Cable length	
• shielded, max.	100 m; to the sensor

Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
Resolution with overrange (bit including sign), max.	15 bit; + sign
Integration time, parameterizable	Yes
Interference voltage suppression for interference frequency f1 in Hz	85 dB at 10 / 50 / 60 / 400 Hz
Smoothing of measured values	
parameterizable	Yes
Step: None	Yes
Step: low	Yes
Step: Medium	Yes
Step: High	Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1 % / -20 °C to 60 °C ±0.2 % of the full-scale deflection
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
Common mode interference, min.	120 dB
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes; Can be read out
Alarms	
Diagnostic alarm	Yes
Diagnoses	
Monitoring the supply voltage	Yes
Wire-break	Yes
Diagnostics indication LED	
DIAG LED	Yes
for status of the inputs	Yes
Potential separation	
Potential separation analog inputs	
between the channels and the power supply of the electronics	Yes
Isolation	
Isolation tested with	707 V DC (type test)
tested with	
Between channels	No
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
CSA approval	No
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	No
Ambient conditions	
Free fall	
Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
horizontal installation, min.	-20 °C
horizontal installation, max.	60 °C; at max. voltages and max. specification
vertical installation, min.	-20 °C
vertical installation, max.	50 °C; at max. voltages and max. specification
Ambient temperature during storage/transportation	
min.	-40 °C
max.	70 °C
Air pressure acc. to IEC 60068-2-13	

• Operation, min.	540 hPa
• Operation, max.	1 140 hPa
• Storage/transport, min.	540 hPa
• Storage/transport, max.	1 140 hPa
Altitude during operation relating to sea level	
• Installation altitude, min.	-1 000 m
• Installation altitude, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
• Operation, max.	95 %; no condensation
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	3.5 mm from 5 - 8.4 Hz, 1g from 8.4 - 150 Hz
• Operation, tested according to IEC 60068-2-6	Yes
Shock testing	
• tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27; half-sine, 15 g, 11 ms
Pollutant concentrations	
• SO ₂ at RH < 60% without condensation	SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60 % condensation-free
connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	30 mm
Height	125 mm
Depth	100 mm
Weights	
Weight, approx.	169 g
Approvals / Certificates	
General Product Approval	
EMV	
For use in hazardous locations	
Miscellaneous	Manufacturer Declaration
KC	KC
	CCC-Ex

last modified:

6/1/2025 