SIEMENS

Data sheet 6ES7231-5PD50-0XB0

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	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
● Pt 200	Yes
— Input resistance (Pt 200)	200 Ω
● Pt 500	Yes
— Input resistance (Pt 500)	500 Ω
Input ranges (rated values), resistors	
● 0 to 150 ohms	Yes
● 0 to 300 ohms	Yes
● 0 to 600 ohms	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 x (f1 +/- 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	
● SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 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

Classifications

	Version	Classification
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

Approvals / Certificates

General Product Approval	EMV

Miscellaneous	Manufacturer Declaration	KC	CE EG-Konf.	UKCA	KC

For use in hazardous locations

CCC-Ex

last modified: 8/19/2025