



Figure similar

SIPLUS S7-1200 SM 1231 based on 6ES7231-5PD32-0XB0 with conformal coating, -20...+60 °C, analog input, SM 1231 RTD 4xAI RTD module

General information	
Product type designation	SM 1231, AI 4x16 bit RTD
based on	6ES7231-5PD32-0XB0
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
• 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
Thermocouple (TC)	
Temperature compensation	
— Parameterizable	No
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	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz
Errors/accuracies	
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 $f = n \times (f1 \pm 1 \%)$, 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	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
Ecological footprint	
• environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	43.1 kg
— global warming potential, (during production) [CO2 eq]	7.62 kg
— global warming potential, (during operation) [CO2 eq]	36 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.544 kg
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C

Altitude during operation relating to sea level			
<ul style="list-style-type: none">• Installation altitude above sea level, max.• Ambient air temperature-barometric pressure-altitude		5 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	
Relative humidity			
<ul style="list-style-type: none">• With condensation, tested in accordance with IEC 60068-2-38, max.		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance			
Coolants and lubricants			
— Resistant to commercially available coolants and lubricants		Yes; Incl. diesel and oil droplets in the air	
Use in stationary industrial systems			
— to biologically active substances according to EN 60721-3-3		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	
— to chemically active substances according to EN 60721-3-3		Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-3		Yes; Class 3S4 incl. sand, dust, *	
Use on ships/at sea			
— to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
— to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *	
Usage in industrial process technology			
— Against chemically active substances acc. to EN 60654-4		Yes; Class 3 (excluding trichlorethylene)	
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04		Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	
Remark			
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04		* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating			
<ul style="list-style-type: none">• Coatings for printed circuit board assemblies acc. to EN 61086• Protection against fouling acc. to EN 60664-3• Military testing according to MIL-I-46058C, Amendment 7• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A		Yes; Class 2 for high reliability Yes; Type 1 protection Yes; Discoloration of coating possible during service life Yes; Conformal coating, Class A	
Connection method			
required front connector		Yes	
Mechanics/material			
Enclosure material (front)			
<ul style="list-style-type: none">• Plastic		Yes	
Dimensions			
Width		45 mm	
Height		100 mm	
Depth		75 mm	
Weights			
Weight, approx.		220 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](#)
[China RoHS](#)
[Metrological Approval](#)

General Product Approval

EMV







[China RoHS](#)

For use in hazardous locations

Maritime application

Environment







last modified:

10/9/2024 