

SIPLUS S7-1200 SM 1234 4AI/2AQ for medial exposure with conformal coating based on 6ES7234-4HE32-0XB0 . analog I/O +/- 10 V: 14-bit resolution or 0-20mA: 13-bit resolution



Figure similar

General information	
Product type designation	SM 1234, AI 4x13 bit/AQ 2x14 bit
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 $\mu$ s

Input ranges	
• Voltage	Yes; $\pm 10V$ , $\pm 5V$ , $\pm 2.5V$
• Current	Yes; 4 to 20 mA, 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	$\geq 9 \text{ MOhm}$
• -2.5 V to +2.5 V	Yes
— Input resistance (-2.5 V to +2.5 V)	$\geq 9 \text{ MOhm}$
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	$\geq 9 \text{ MOhm}$
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	$280 \Omega$
• 4 mA to 20 mA	Yes
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	$1\ 000 \Omega$
• with current outputs, max.	$600 \Omega$
Analog value generation for the inputs	
Measurement principle	Differential
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency $f_1$ in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes

## Analog value generation for the outputs

### Integration and conversion time/resolution per channel

- Resolution (incl. overrange) Voltage: 14 bit; Current : 13 bit

## Errors/accuracies

Temperature error (relative to input range), (+/-) 25 °C  $\pm$ 0.1%, to 55 °C  $\pm$ 0.2% total measurement range

Temperature error (relative to output range), (+/-) 25 °C  $\pm$ 0.3%, to 55 °C  $\pm$ 0.6% total measurement range

### Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-) 0.1 %
- Current, relative to input range, (+/-) 0.1 %
- Voltage, relative to output range, (+/-) 0.3 %
- Current, relative to output range, (+/-) 0.3 %

### Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1$ = interference frequency

- Common mode voltage, max. 12 V

## Interrupts/diagnostics/status information

Alarms Yes

Diagnostics function Yes

### Alarms

- Diagnostic alarm Yes

### Diagnoses

- Monitoring the supply voltage Yes
- Wire-break Yes
- Short-circuit Yes

### Diagnostics indication LED

- for status of the inputs Yes
- for status of the outputs Yes
- for maintenance Yes

## Potential separation

### Potential separation analog outputs

- between the channels and the power supply of the electronics No

## Degree and class of protection

IP degree of protection IP20

## 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
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	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)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Coolants and lubricants</b>	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
<b>Use in stationary industrial systems</b>	
— 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, *
<b>Use on ships/at sea</b>	
— 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; *
<b>Usage in industrial process technology</b>	
— 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)
<b>Remark</b>	
— 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!
<b>Conformal coating</b>	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life

- Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A

Yes; Conformal coating, Class A

#### Connection method

required front connector

Yes

#### Mechanics/material

Enclosure material (front)

- Plastic

Yes

#### Dimensions

Width

45 mm

Height

100 mm

Depth

75 mm

#### Weights

Weight, approx.

220 g

**last modified:**

10/13/2020