

SIPLUS S7-1200 SM 1234 4AI/2AQ -25 ... +55°C T1 with 70°C for 10 min with conformal coating Based on: 6ES7234-4HE32-0XB0 . SM 1234, 4 AI/2 AO, +/-10 V, 14-bit resolution or 0 (4)-20mA, 13-bit resolution

General information

Product type designation	SM 1234 A I4x13 bit AQ 2x14 bit
--------------------------	---------------------------------

Supply voltage

Rated value (DC)	Yes
<ul style="list-style-type: none"> • 24 V DC 	

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 current input (destruction limit), max.	± 35 V
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for voltage input (destruction limit), max.	40 mA
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 µs

Input ranges

<ul style="list-style-type: none"> • Voltage 	Yes; ±10V, ±5V, ±2.5V
<ul style="list-style-type: none"> • Current 	Yes; 4 to 20 mA, 0 to 20 mA

Input ranges (rated values), voltages

<ul style="list-style-type: none"> • -10 V to +10 V 	Yes
<ul style="list-style-type: none"> • Input resistance (-10 V to +10 V) 	≥9 MOhm
<ul style="list-style-type: none"> • -2.5 V to +2.5 V 	Yes
<ul style="list-style-type: none"> • Input resistance (-2.5 V to +2.5 V) 	≥9 MOhm
<ul style="list-style-type: none"> • -5 V to +5 V 	Yes
<ul style="list-style-type: none"> • Input resistance (-5 V to +5 V) 	≥9 MOhm

Input ranges (rated values), currents

<ul style="list-style-type: none"> • 0 to 20 mA 	Yes
--	-----

- Input resistance (0 to 20 mA) 280 Ω
- 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 Ω
- with current outputs, max. 600 Ω

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 bits; Current : 13 bits

Errors/accuracies

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

Temperature error (relative to output range), (+/-) 25 °C ±0.3%, to 55 °C ±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
Diagnostic functions	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• 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
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles - 24 V supply of assembly: Cable length <3 m or with upstream filter for supply cable
• EN 50121-4	Yes; EMC for signal and telecommunications systems - 24 V supply of the assembly: with upstream filter for supply cable
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Free fall	

• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• 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
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 land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
— Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
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
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776
last modified:	05/16/2018