



SIMATIC S7-1200, analog I/O 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, 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	
<ul style="list-style-type: none"> <li>• Voltage</li> <li>• Current</li> <li>• Thermocouple</li> <li>• Resistance thermometer</li> <li>• Resistance</li> </ul>	Yes; $\pm 10V$ , $\pm 5V$ , $\pm 2.5V$ Yes; 4 to 20 mA, 0 to 20 mA No No No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> <li>• -10 V to +10 V — Input resistance (-10 V to +10 V)</li> <li>• -2.5 V to +2.5 V — Input resistance (-2.5 V to +2.5 V)</li> <li>• -5 V to +5 V — Input resistance (-5 V to +5 V)</li> </ul>	Yes $\geq 9$ MOhm Yes $\geq 9$ MOhm Yes $\geq 9$ MOhm
Input ranges (rated values), currents	
<ul style="list-style-type: none"> <li>• 0 to 20 mA — Input resistance (0 to 20 mA)</li> <li>• 4 mA to 20 mA</li> </ul>	Yes 280 $\Omega$ Yes
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
<ul style="list-style-type: none"> <li>• -10 V to +10 V</li> </ul>	Yes
Output ranges, current	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> <li>• 4 mA to 20 mA</li> </ul>	Yes Yes

<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>with voltage outputs, min.</li> <li>with current outputs, max.</li> </ul>	 1 000 Ω 600 Ω
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> </ul>	100 m; shielded, twisted pair
<b>Analog value generation for the inputs</b>	
Measurement principle	Differential
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time, parameterizable</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	 12 bit; + sign Yes 40 dB, DC to 60 V for interference frequency 50 / 60 Hz
<b>Smoothing of measured values</b>	
<ul style="list-style-type: none"> <li>parameterizable</li> <li>Step: None</li> <li>Step: low</li> <li>Step: Medium</li> <li>Step: High</li> </ul>	 Yes Yes Yes Yes Yes
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>	14 bit; Voltage: 14 bit; Current : 13 bit
<b>Errors/accuracies</b>	
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
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>Voltage, relative to input range, (+/-)</li> <li>Current, relative to input range, (+/-)</li> <li>Voltage, relative to output range, (+/-)</li> <li>Current, relative to output range, (+/-)</li> </ul>	 0.1 % 0.1 % 0.3 % 0.3 %
<b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, f1 = interference frequency</b>	
<ul style="list-style-type: none"> <li>Common mode voltage, max.</li> </ul>	12 V
<b>Interrupts/diagnostics/status information</b>	
Alarms	Yes
Diagnostics function	Yes
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> <li>Wire-break</li> <li>Short-circuit</li> </ul>	 Yes Yes Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>for status of the inputs</li> <li>for status of the outputs</li> <li>for maintenance</li> </ul>	 Yes Yes Yes
<b>Potential separation</b>	
<b>Potential separation analog outputs</b>	
<ul style="list-style-type: none"> <li>between the channels and the power supply of the electronics</li> </ul>	No
<b>Degree and class of protection</b>	
IP degree of protection	IP20
<b>Standards, approvals, certificates</b>	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
<b>Ecological footprint</b>	
<ul style="list-style-type: none"> <li>environmental product declaration</li> </ul>	Yes

<b>Global warming potential</b>			
— 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		
<b>Ambient conditions</b>			
<b>Free fall</b>			
• Fall height, max.	0.3 m; five times, in product package		
<b>Ambient temperature during operation</b>			
• min.	-20 °C		
• max.	60 °C		
• horizontal installation, min.	-20 °C		
• horizontal installation, max.	60 °C		
• vertical installation, min.	-20 °C		
• vertical installation, max.	50 °C		
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C		
• max.	70 °C		
<b>Air pressure acc. to IEC 60068-2-13</b>			
• Operation, min.	795 hPa		
• Operation, max.	1 080 hPa		
• Storage/transport, min.	660 hPa		
• Storage/transport, max.	1 080 hPa		
<b>Relative humidity</b>			
• Operation at 25 °C without condensation, max.	95 %		
<b>Pollutant concentrations</b>			
• SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60 % condensation-free		
<b>connection method</b>			
required front connector	Yes		
<b>Mechanics/material</b>			
Enclosure material (front)			
• Plastic	Yes		
<b>Dimensions</b>			
Width	45 mm		
Height	100 mm		
Depth	75 mm		
<b>Weights</b>			
Weight, approx.	220 g		
<b>Classifications</b>			
		<b>Version</b>	<b>Classification</b>
	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	9	EC001420
	ETIM	8	EC001420
	ETIM	7	EC001420
	IDEA	4	3562
	UNSPSC	15	32-15-17-05
<b>Approvals / Certificates</b>			
<b>General Product Approval</b>			



[KC](#)



EMV	Functional Safety	Test Certificates		Maritime application	
-----	-------------------	-------------------	--	----------------------	--



[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



Maritime application	other				
----------------------	-------	--	--	--	--



[Confirmation](#)



[Miscellaneous](#)

other	Railway		Environment		
-------	---------	--	-------------	--	--

[Confirmation](#)

[Miscellaneous](#)

[Special Test Certificate](#)



Siemens EcoTech



[Environmental Confirmations](#)

last modified:

5/16/2025