

SIMATIC S7-1200, ANALOG I/O SM 1234, 4 AI / 2 AO, +/-10V, 14 BIT RESOLUTION OR 0(4) - 20 MA, 13 BIT RESOLUTION



Supply voltage	
24 V DC	Yes
Input current	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Power losses	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input frequency for current input (destruction limit), max.	$\pm 35$ 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 $\mu$ s
Input ranges	

• Voltage	Yes; $\pm 10$ V, $\pm 5$ V, $\pm 2.5$ V
• Current	Yes; 4 to 20 mA, 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	Yes
<b>Input ranges (rated values), voltages</b>	
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	$\geq 9$ MOhm
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	$\geq 9$ MOhm
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	$\geq 9$ MOhm
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	280 $\Omega$
• 4 to 20 mA	Yes
<b>Analog outputs</b>	
Number of analog outputs	2; Current or voltage
<b>Output ranges, voltage</b>	
• -10 to +10 V	Yes
<b>Output ranges, current</b>	
• 0 to 20 mA	Yes
• 4 to 20 mA	Yes
<b>Load impedance (in rated range of output)</b>	
• with voltage outputs, min.	1 000 $\Omega$
• with current outputs, max.	600 $\Omega$
<b>Analog value creation</b>	
Measurement principle	Differential
<b>Integration and conversion time/resolution per channel</b>	
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
<b>Smoothing of measured values</b>	
• Parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
<b>Errors/accuracies</b>	
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 area, (+/-)	0.1 %
• Current, relative to input area, (+/-)	0.1 %
• Voltage, relative to output area, (+/-)	0.3 %
• Current, relative to output area, (+/-)	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

- |                    |     |
|--------------------|-----|
| • Alarms           | Yes |
| • Diagnostic alarm | Yes |

### Diagnostic messages

- |                                 |     |
|---------------------------------|-----|
| • Diagnostic functions          | Yes |
| • 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 |

## Galvanic isolation

### Galvanic isolation analog outputs

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

## Degree and class of protection

### Degree of protection to EN 60529

- |        |     |
|--------|-----|
| • IP20 | Yes |
|--------|-----|

## Standards, approvals, certificates

- |                       |     |
|-----------------------|-----|
| CE mark               | Yes |
| CSA approval          | Yes |
| RCM (formerly C-TICK) | Yes |
| FM approval           | Yes |

### Marine approval

- |                   |     |
|-------------------|-----|
| • Marine approval | Yes |
|-------------------|-----|

### Highest safety class achievable in safety mode

- |                                   |      |
|-----------------------------------|------|
| • SIL according to IEC 61508:2010 | none |
|-----------------------------------|------|

## Climatic and mechanical conditions for storage and transport

### Climatic conditions for storage and transport

#### Free fall

- |                                    |  |
|------------------------------------|--|
| — Drop height, max. (in packaging) | 0.3 m; five times, in dispatch package |
|------------------------------------|--|

#### Temperature

- |                                 |                  |
|---------------------------------|------------------|
| — Permissible temperature range | -40 °C to +70 °C |
|---------------------------------|------------------|

#### Air pressure acc. to IEC 60068-2-13

— Permissible air pressure	1080 to 660 hPa
<b>Relative humidity</b>	
— Permissible range (without condensation) at 25 °C	95 %

#### Mechanical and climatic conditions during operation

##### Climatic conditions in operation

<b>Temperature</b>	
— Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
<b>Air pressure acc. to IEC 60068-2-13</b>	
— Permissible air pressure	1080 to 795 hPa
<b>Pollutant concentrations</b>	
— SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

##### Connection method

required front connector	Yes
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##### Mechanics/material

Type of housing (front)	
• plastic	Yes

##### Dimensions

Width	45 mm
Height	100 mm
Depth	75 mm

##### Weights

Weight, approx.	220 g
<b>last modified:</b>	14.10.2014