

SIMATIC S7-1200, ANALOG INPUT, SM 1231 TC, 8 AI  
THERMOCOUPLE



## Supply voltage

Rated value (DC)

- 24 V DC

Yes

## 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

8; Thermocouples

permissible input voltage for current input  
(destruction limit), max.

$\pm 35$  V

permissible input voltage for voltage input  
(destruction limit), max.

+/-35 V

Technical unit for temperature measurement  
adjustable

Degrees Celsius/degrees Fahrenheit

## Input ranges

- Voltage

Yes

• Current	No
• Thermocouple	Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: $\pm 80$ mV
• Resistance thermometer	No
• Resistance	No
<b>Input ranges (rated values), voltages</b>	
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	$\geq 1$ MOhm
<b>Input ranges (rated values), thermocouples</b>	
• Type B	Yes
• Type C	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type TXK/TXK(L) to GOST	Yes
<b>Thermocouple (TC)</b>	
Temperature compensation	
— parameterizable	No
<b>Analog value generation</b>	
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	No
• Interference voltage suppression for interference frequency $f_1$ in Hz	85 dB at 50 / 60 / 400 Hz
<b>Smoothing of measured values</b>	
• parameterizable	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
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.5 %
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b>	
• Common mode interference, min.	120 dB
<b>Interrupts/diagnostics/status information</b>	
Alarms	Yes
Diagnostic functions	Yes; Can be read out
Alarms	

• Diagnostic alarm	Yes
<b>Diagnostic messages</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
<b>Diagnostics indication LED</b>	
• for status of the inputs	Yes
• for maintenance	Yes
<b>Degree and class of protection</b>	
Degree of protection acc. to EN 60529	
• IP20	Yes
<b>Standards, approvals, certificates</b>	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
<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>	
• permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• min.	-20 °C
• max.	60 °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>	
• permissible range (without condensation) at 25 °C	95 %
<b>Extended ambient conditions</b>	
<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>last modified:</b>	09.04.2016