



SIMATIC S7-1200, ANALOG INPUT,
SM 1231 TC, 4 AI THERMOCOUPLE

Supply voltage	
24 V DC	Yes
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power losses	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4 ; Thermocouples
permissible input frequency for current input (destruction limit), max.	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
Thermocouple	Yes ; J, K, T, E, R, S, N, C, TXK/XK(L); voltage range: +/-80 mV
Resistance thermometer	No
Resistance	No
Input ranges (rated values), voltages	
-80 mV to +80 mV	Yes
Input resistance (-80 mV to +80 mV)	>= 1 MOhm

Input ranges (rated values), thermoelements	
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
Thermocouple (TC)	
permissible input voltage for voltage input (destruction limit), max.	+35 V
Temperature compensation	
Parameterizable	No
Analog outputs	
Number of analog outputs	0
Analog value creation	
Measurement principle	integrating
Integrations and conversion time/resolution per channel	
Resolution with overrange (bit including sign), max.	15 bit ; + sign
Integration time, parameterizable	No
Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz
Analog value generation (in isochronous mode)	
Smoothing of measured values	
Parameterizable	Yes
Errors/accuracies	
Temperature error (relative to input area)	25 °C ±0.1 % to 55 °C ±0.2 % total measurement range
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.5 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
Common mode interference, min.	120 dB
Interrupts/diagnostics/status information	
Alarms	
Alarms	Yes
Diagnostic alarm	Yes
Diagnostic messages	

Diagnostic functions	Yes ; Can be read out
Monitoring the supply voltage	Yes
Wire break	Yes
Diagnostics indication LED	
for status of the inputs	Yes
for maintenance	Yes
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
RCM (former C-TICK)	Yes
FM approval	Yes
Highest safety class achievable in safety mode	
acc. to IEC 61508	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
Relative humidity	
Permissible range (without condensation) at 25 °C	95 %
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
Air pressure acc. to IEC 60068-2-13	
Permissible air pressure	1080 to 795 hPa
Pollutant concentrations	
SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Type of housing (front)	
Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm

Depth	75 mm
Weights	
Weight, approx.	180 g
Status	May 9, 2014