



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 range), (+/-)	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	

<b>Diagnostic functions</b>	Yes ; Can be read out
<b>Monitoring the supply voltage</b>	Yes
<b>Wire break</b>	Yes
<b>Diagnostics indication LED</b>	
<b>for status of the inputs</b>	Yes
<b>for maintenance</b>	Yes
<b>Degree and class of protection</b>	
<b>IP20</b>	Yes
<b>Standards, approvals, certificates</b>	
<b>CE mark</b>	Yes
<b>RCM (former C-TICK)</b>	Yes
<b>FM approval</b>	Yes
<b>Highest safety class achievable in safety mode</b>	
<b>acc. to IEC 61508</b>	none
<b>Climatic and mechanical conditions for storage and transport</b>	
<b>Climatic conditions for storage and transport</b>	
<b>Free fall</b>	
<b>Drop height, max. (in packaging)</b>	0.3 m ; five times, in dispatch package
<b>Temperature</b>	
<b>Permissible temperature range</b>	-40 °C to +70 °C
<b>Air pressure acc. to IEC 60068-2-13</b>	
<b>Permissible air pressure</b>	1080 to 660 hPa
<b>Relative humidity</b>	
<b>Permissible range (without condensation) at 25 °C</b>	95 %
<b>Mechanical and climatic conditions during operation</b>	
<b>Climatic conditions in operation</b>	
<b>Temperature</b>	
<b>Permissible temperature range</b>	-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>	
<b>Permissible air pressure</b>	1080 to 795 hPa
<b>Pollutant concentrations</b>	
<b>SO2 at RH &lt; 60% without condensation</b>	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
<b>Connection method</b>	
<b>required front connector</b>	Yes
<b>Mechanics/material</b>	
<b>Type of housing (front)</b>	
<b>Plastic</b>	Yes

## Dimensions

<b>Width</b>	45 mm
<b>Height</b>	100 mm
<b>Depth</b>	75 mm

## Weights

<b>Weight, approx.</b>	180 g
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Status Jun 3, 2014