



SIMATIC S7-1200, ANALOG INPUT, SM 1231,  
 4 AI, +/-10V, +/-5V, +/-2.5V,  
 +/-1.25 OR 0-20MA/4-20 MA,  
 15 BIT + SIGN BIT

| Supply voltage  |  |
|---|--|
| 24 V DC   | Yes  |
| Input current   |  |
| Current consumption, typ.   | 65 mA  |
| from backplane bus 5 V DC, typ.                                       | 80 mA  |
| Power losses  |  |
| Power loss, typ.  | 1.8 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 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 o. $\pm 1.25$ V |
| Current   | Yes ; 4 to 20 mA, 0 to 20 mA                             |
| Thermocouple  | No   |
| Resistance thermometer  | No   |
| Resistance  | Yes  |

| Input ranges (rated values), voltages   |   |
|---|---|
| -1.25 to +1.25 V  | Yes   |
| -10 V to +10 V  | Yes   |
| Input resistance (-10 V to +10 V)   | ≥9 MOhm   |
| -2.5 V to +2.5 V  | Yes   |
| Input resistance (-2.5 V to +2.5 V)   | ≥9 MOhm   |
| -5 V to +5 V  | Yes   |
| Input resistance (-5 V to +5 V)   | ≥9 MOhm   |
| Input ranges (rated values), currents   |   |
| 0 to 20 mA  | Yes   |
| 4 to 20 mA  | Yes   |
| Analog outputs  |   |
| Number of analog outputs  | 0   |
| Analog value creation   |   |
| Integrations and conversion time/resolution per channel   |   |
| Resolution with overrange (bit including sign), max.  | 15 bit ; + sign   |
| 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 |
| Smoothing of measured values  |   |
| Parameterizable   | Yes   |
| Step: None  | Yes   |
| Step: low   | Yes   |
| Step: Medium  | Yes   |
| Step: High  | Yes   |
| Errors/accuracies   |   |
| Basic error limit (operational limit at 25 °C)  |   |
| Voltage, relative to input area, (+/-)  | 0.1 %   |
| Current, relative to input area, (+/-)  | 0.1 %   |
| Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$ , f1 = 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  |
| Diagnostics indication LED                                   |  |
| for status of the inputs                                     | 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                               |  |
| IP20   | Yes  |
| Standards, approvals, certificates                           |  |
| CE mark  | Yes  |
| CSA approval   | Yes  |
| RCM (former C-TICK)  | Yes  |
| FM approval  | Yes  |
| Marine approval  |  |
| Marine 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                             |  |
| Temperature  |  |
| Min.   | -20 °C   |
| max.   | 60 °C  |
| 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  |  |

|                                 |             |
|---------------------------------|-------------|
| <b>required front connector</b> | Yes         |
| <b>Mechanics/material</b>       |             |
| <b>Type of housing (front)</b>  |             |
| <b>Plastic</b>                  | Yes         |
| <b>Dimensions</b>               |             |
| <b>Width</b>                    | 45 mm       |
| <b>Height</b>                   | 100 mm      |
| <b>Depth</b>                    | 75 mm       |
| <b>Weights</b>                  |             |
| <b>Weight, approx.</b>          | 180 g       |
| Status                          | May 9, 2014 |