

SIMATIC S7-1200, ANALOG INPUT, SM 1231RTD, 8 X AI RTD  
MODULE,



### 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; Resistance thermometer

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

$\pm 35$  V

Technical unit for temperature measurement  
adjustable

Degrees Celsius/degrees Fahrenheit

### Input ranges

- Voltage
- Current
- Thermocouple

No

No

No

|                                                                        |                                                                                                                                             |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| • Resistance thermometer                                               | Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000 |
| • Resistance                                                           | Yes; 150 Ω, 300 Ω, 600 Ω                                                                                                                    |
| Input ranges (rated values), resistance thermometer                    |                                                                                                                                             |
| • Cu 10                                                                | Yes                                                                                                                                         |
| • Input resistance (Cu 10)                                             | 10 Ω                                                                                                                                        |
| • Ni 100                                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 100)                                            | 100 Ω                                                                                                                                       |
| • Ni 1000                                                              | Yes                                                                                                                                         |
| • Input resistance (Ni 1000)                                           | 1 000 Ω                                                                                                                                     |
| • LG-Ni 1000                                                           | Yes                                                                                                                                         |
| • Input resistance (LG-Ni 1000)                                        | 1 000 Ω                                                                                                                                     |
| • Ni 120                                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 120)                                            | 120 Ω                                                                                                                                       |
| • Ni 200                                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 200)                                            | 200 Ω                                                                                                                                       |
| • Ni 500                                                               | Yes                                                                                                                                         |
| • Input resistance (Ni 500)                                            | 500 Ω                                                                                                                                       |
| • Pt 100                                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 100)                                            | 100 Ω                                                                                                                                       |
| • Pt 1000                                                              | Yes                                                                                                                                         |
| • Input resistance (Pt 1000)                                           | 1 000 Ω                                                                                                                                     |
| • Pt 200                                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 200)                                            | 200 Ω                                                                                                                                       |
| • Pt 500                                                               | Yes                                                                                                                                         |
| • Input resistance (Pt 500)                                            | 500 Ω                                                                                                                                       |
| Input ranges (rated values), resistors                                 |                                                                                                                                             |
| • 0 to 150 ohms                                                        | Yes                                                                                                                                         |
| • 0 to 300 ohms                                                        | Yes                                                                                                                                         |
| • 0 to 600 ohms                                                        | Yes                                                                                                                                         |
| Thermocouple (TC)                                                      |                                                                                                                                             |
| Temperature compensation                                               |                                                                                                                                             |
| — parameterizable                                                      | No                                                                                                                                          |
| Analog value generation                                                |                                                                                                                                             |
| Measurement principle                                                  | integrating                                                                                                                                 |
| Integration 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                                                                                                                   |

| 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 range), (+/-)                          | 0.05 %                                                                                                |
| Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1$ = interference frequency |                                                                                                       |
| • Common mode interference, min.                                                                    | 120 dB                                                                                                |
| Interrupts/diagnostics/status information                                                           |                                                                                                       |
| Alarms                                                                                              | Yes                                                                                                   |
| Diagnostic functions                                                                                | Yes; Can be read out                                                                                  |
| Alarms                                                                                              |                                                                                                       |
| • Diagnostic alarm                                                                                  | Yes                                                                                                   |
| Diagnostic messages                                                                                 |                                                                                                       |
| • 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                                                                      |                                                                                                       |
| Degree of protection acc. to EN 60529                                                               |                                                                                                       |
| • IP20                                                                                              | Yes                                                                                                   |
| Standards, approvals, certificates                                                                  |                                                                                                       |
| CE mark                                                                                             | Yes                                                                                                   |
| CSA approval                                                                                        | Yes                                                                                                   |
| FM approval                                                                                         | Yes                                                                                                   |
| RCM (formerly C-TICK)                                                                               | Yes                                                                                                   |
| Ambient conditions                                                                                  |                                                                                                       |
| Free fall                                                                                           |                                                                                                       |
| • Fall height, max.                                                                                 | 0.3 m; five times, in product package                                                                 |
| Ambient temperature during operation                                                                |                                                                                                       |
| • 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                                                                                                 |
| Ambient temperature during storage/transportation                                                   |                                                                                                       |
| • min.                                                                                              | -40 °C                                                                                                |
| • max.                                                                                              | 70 °C                                                                                                 |
| Air pressure acc. to IEC 60068-2-13                                                                 |                                                                                                       |
| • Operation, min.                                                                                   | 795 hPa                                                                                               |
| • Operation, max.                                                                                   | 1 080 hPa                                                                                             |
| • Storage/transport, min.                                                                           | 660 hPa                                                                                               |
| • Storage/transport, max.                                                                           | 1 080 hPa                                                                                             |

|                                                     |                                                            |
|-----------------------------------------------------|------------------------------------------------------------|
| Relative humidity                                   |                                                            |
| • permissible range (without condensation) at 25 °C | 95 %                                                       |
| Extended ambient conditions                         |                                                            |
| 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                                  |                                                            |
| Enclosure material (front)                          |                                                            |
| • Plastic                                           | Yes                                                        |
| Dimensions                                          |                                                            |
| Width                                               | 70 mm                                                      |
| Height                                              | 100 mm                                                     |
| Depth                                               | 75 mm                                                      |
| Weights                                             |                                                            |
| Weight, approx.                                     | 220 g                                                      |
| last modified:                                      | 10/28/2016                                                 |