

## Data sheet

## 6ES7231-5PA30-0XB0



SIMATIC S7-1200, Analog input, SB 1231RTD, 1 AI RTD, Pt100 and Pt1000

| General information                                                                                                                                         |                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Product type designation                                                                                                                                    | SB 1231, AI 1x16 bit RTD           |
| Supply voltage                                                                                                                                              |                                    |
| Rated value (DC)                                                                                                                                            | 24 V                               |
| Input current                                                                                                                                               |                                    |
| Current consumption, typ.                                                                                                                                   | 5 mA                               |
| from backplane bus 5 V DC, typ.                                                                                                                             | 20 mA                              |
| Power loss                                                                                                                                                  |                                    |
| Power loss, typ.                                                                                                                                            | 0.5 W                              |
| Analog inputs                                                                                                                                               |                                    |
| Number of analog inputs                                                                                                                                     | 1; Resistance thermometer          |
| permissible input voltage for current input (destruction limit), max.                                                                                       | ±35 V                              |
| Technical unit for temperature measurement adjustable                                                                                                       | Degrees Celsius/degrees Fahrenheit |
| Input ranges                                                                                                                                                |                                    |
| <ul style="list-style-type: none"> <li>Voltage</li> </ul>                                                                                                   | Yes                                |
| <ul style="list-style-type: none"> <li>Current</li> </ul>                                                                                                   | No                                 |
| <ul style="list-style-type: none"> <li>Thermocouple</li> </ul>                                                                                              | No                                 |
| <ul style="list-style-type: none"> <li>Resistance thermometer</li> </ul>                                                                                    | Yes; Platinum (Pt)                 |
| <ul style="list-style-type: none"> <li>Resistance</li> </ul>                                                                                                | Yes; 150 Ω, 300 Ω, 600 Ω           |
| Input ranges (rated values), voltages                                                                                                                       |                                    |
| <ul style="list-style-type: none"> <li>-80 mV to +80 mV <ul style="list-style-type: none"> <li>— Input resistance (-80 mV to +80 mV)</li> </ul> </li> </ul> | ≥ 10 MΩ                            |
| Input ranges (rated values), resistance thermometer                                                                                                         |                                    |
| <ul style="list-style-type: none"> <li>Pt 100 <ul style="list-style-type: none"> <li>— Input resistance (Pt 100)</li> </ul> </li> </ul>                     | Yes<br>100 Ω                       |
| <ul style="list-style-type: none"> <li>Pt 1000 <ul style="list-style-type: none"> <li>— Input resistance (Pt 1000)</li> </ul> </li> </ul>                   | Yes<br>1 000 Ω                     |
| <ul style="list-style-type: none"> <li>Pt 200 <ul style="list-style-type: none"> <li>— Input resistance (Pt 200)</li> </ul> </li> </ul>                     | Yes<br>200 Ω                       |
| <ul style="list-style-type: none"> <li>Pt 500 <ul style="list-style-type: none"> <li>— Input resistance (Pt 500)</li> </ul> </li> </ul>                     | Yes<br>500 Ω                       |
| Input ranges (rated values), resistors                                                                                                                      |                                    |
| <ul style="list-style-type: none"> <li>0 to 150 ohms</li> </ul>                                                                                             | Yes                                |
| <ul style="list-style-type: none"> <li>0 to 300 ohms</li> </ul>                                                                                             | Yes                                |
| <ul style="list-style-type: none"> <li>0 to 600 ohms</li> </ul>                                                                                             | Yes                                |
| Thermocouple (TC)                                                                                                                                           |                                    |
| Temperature compensation                                                                                                                                    |                                    |
| — parameterizable                                                                                                                                           | No                                 |
| Analog outputs                                                                                                                                              |                                    |

|                                                                                                 |                                                             |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Number of analog outputs                                                                        | 0                                                           |
| Cable length                                                                                    |                                                             |
| • shielded, max.                                                                                | 100 m; shielded, twisted pair                               |
| <b>Analog value generation for the inputs</b>                                                   |                                                             |
| 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 10 / 50 / 60 / 400 Hz                              |
| <b>Errors/accuracies</b>                                                                        |                                                             |
| 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 $f = n \times (f1 \pm 1 \%)$ , f1 = interference frequency |                                                             |
| • Common mode interference, min.                                                                | 120 dB                                                      |
| <b>Interrupts/diagnostics/status information</b>                                                |                                                             |
| Alarms                                                                                          | Yes                                                         |
| Diagnostics function                                                                            | Yes; Can be read out                                        |
| Alarms                                                                                          |                                                             |
| • Diagnostic alarm                                                                              | Yes                                                         |
| Diagnoses                                                                                       |                                                             |
| • Wire-break                                                                                    | Yes                                                         |
| Diagnostics indication LED                                                                      |                                                             |
| • for status of the inputs                                                                      | Yes                                                         |
| • for maintenance                                                                               | Yes                                                         |
| <b>Standards, approvals, certificates</b>                                                       |                                                             |
| CE mark                                                                                         | Yes                                                         |
| CSA approval                                                                                    | Yes                                                         |
| UL approval                                                                                     | Yes                                                         |
| cULus                                                                                           | Yes                                                         |
| FM approval                                                                                     | Yes                                                         |
| RCM (formerly C-TICK)                                                                           | Yes                                                         |
| KC approval                                                                                     | Yes                                                         |
| Marine approval                                                                                 | Yes                                                         |
| <b>Ambient conditions</b>                                                                       |                                                             |
| Free fall                                                                                       |                                                             |
| • Fall height, max.                                                                             | 0.3 m; five times, in product package                       |
| Ambient temperature during operation                                                            |                                                             |
| • min.                                                                                          | -20 °C                                                      |
| • max.                                                                                          | 60 °C                                                       |
| • horizontal installation, min.                                                                 | -20 °C                                                      |
| • horizontal installation, max.                                                                 | 60 °C                                                       |
| • vertical installation, min.                                                                   | -20 °C                                                      |
| • vertical installation, max.                                                                   | 50 °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                                                                               |                                                             |
| • Operation at 25 °C without condensation, max.                                                 | 95 %                                                        |
| Pollutant concentrations                                                                        |                                                             |
| • 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   |
| Dimensions      |       |
| Width           | 38 mm |
| Height          | 62 mm |
| Depth           | 21 mm |
| Weights         |       |
| Weight, approx. | 35 g  |
| Classifications |       |

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 14      | 27-24-22-01    |
| eClass | 12      | 27-24-22-01    |
| eClass | 9.1     | 27-24-22-01    |
| eClass | 9       | 27-24-22-01    |
| eClass | 8       | 27-24-22-01    |
| eClass | 7.1     | 27-24-22-01    |
| eClass | 6       | 27-24-22-01    |
| ETIM   | 10      | EC001420       |
| ETIM   | 9       | EC001420       |
| ETIM   | 8       | EC001420       |
| ETIM   | 7       | EC001420       |
| IDEA   | 4       | 3562           |
| UNSPSC | 15      | 32-15-17-05    |

Approvals / Certificates

|                                                                                                                                                                                                                                                                                                                                                 |                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| General Product Approval                                                                                                                                                                                                                                                                                                                        | Test Certificates                                                                           |
|     | <a href="#">Type Test Certificates/Test Report</a> <a href="#">Special Test Certificate</a> |

|                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Maritime application                                                                                                                                                                                                                                                                                                                            | other                                                                                                              |
|     | <a href="#">Confirmation</a>  |

Environment

[Environmental Confirmations](#)

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